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URBAN/MUNICIPAL

TRUCKS



**IN THE CITY OF
HAMILTON**

HAMILTON DEPARTMENT OF TRAFFIC, 1973



HAMILTON TRUCK ORIGIN AND

DESTINATION STUDY

A Report on the Study and Analysis of
Existing Truck Movements in the
City of Hamilton

Prepared for the Transportation and Traffic
Committee of the City of Hamilton

By the Department of Traffic and the Ontario
Ministry of Transportation and Communications

July, 1973.

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THE CORPORATION OF THE CITY OF HAMILTON

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OFFICE OF
DEPARTMENT OF TRAFFIC
HAMILTON, ONTARIO

July, 1973.

The Chairman and Members,
The Transportation and
Traffic Committee,
Corporation of the City of Hamilton,
Hamilton, Ontario.

Gentlemen:

Re: Hamilton Truck Origin and Destination Study

On November 14, 1972, City Council passed your resolution to conduct "an origin and destination study of heavy trucks on a City-wide basis". The study was organized and conducted by the Department of Traffic in co-operation with the Ontario Ministry of Transportation and Communications. This report contains the results of the study and recommendations ensuing. The study was managed by a Management Committee, which has reported the study findings to your Sub-Committee on Trucks of the Transportation and Traffic Committee.

Your appointed Sub-Committee on Trucks has met on several occasions to consider the findings of the study and makes the following recommendations; namely,

(1) Add to the existing truck route system

- Upper Ottawa Street, from Mohawk Road to Stone Church Road;
- Stone Church Road, from Upper Gage Avenue to Upper Ottawa Street.

This is suggested in order to service the City Dump and the presently assembled Industrial Park along Upper Ottawa Street and east.

(2) Delete from the existing truck route system

- Caroline Street, from Barton Street to Main Street;

- Locke Street, from York Street to King Street;
- Stinson Street, from Victoria Avenue to Wentworth Street;
- Delaware Avenue, from Wentworth Street to Sherman Avenue;
- Wentworth Street, from Main Street to Stinson Street;
- Sanford Avenue, from Main Street to Delaware Avenue;
- Sherman Avenue, from Main Street to Stinson Street;
- Melvin Avenue, from Walter Avenue to Parkdale Avenue;
- Walter Avenue, from Barton Street to Melvin Avenue;
- West Fifth Street, from Mohawk Road to Fennell Avenue.

(3) Return to 24-hour operation as a permissable truck route

- Mohawk Road, from Upper James Street to the West City Limits.

(4) Restrict to daytime use only (7:00 A.M. to 7:00 P.M.) the following streets:

- Bay Street, from Hunter Street to Main Street;
- Young Street, from John Street to Victoria Avenue;
- Victoria Avenue, from Stinson Street to Young Street;
- Wellington Street, from Hunter Street to Young Street;
- Stinson Street, from Wellington Street to Victoria Avenue;
- Fennell Avenue, from Upper James Street to Garth Street;
- Garth Street, from Fennell Avenue to Mohawk Road;
- Nash Road, from Barton Street to King Street;
- Gage Avenue, from Main Street to Lawrence Road;
- Lawrence Road, from Gage Avenue to King Street;
- Ottawa Street, from King Street to Lawrence Road;
- Cochrane Road, from King Street to Lawrence Road.

(5) The Traffic Department to conduct a detailed study and cost estimate in order to implement a truck route system north of Barton Street similar to that presently south of Barton Street. The main emphasis of this study would be to identify each street, north of Barton Street, which would have to be signed as a Truck Route.

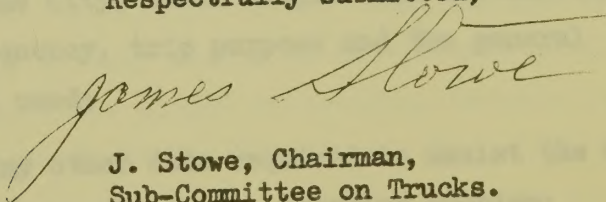
(6) The City Planning and Building Departments be requested to review the Zoning By-law restrictions which prohibit the store of trucks in residential areas. This By-law should be updated and more intensely enforced.

(7) The Board of Police Commissioners be requested to review the Cartage Licence requirements, with a view to require several provisions now stipulated by the Province for P.C.V. Licences.

- (8) The Province be requested to review the use of Highways 53 and 20 under their Class "L" designation for out-of-Province carriers. Highway 403 and the Queen Elizabeth Way should be used.
- (9) The Police Department be requested to develop a 24-hour traffic squad in order that a more concerted enforcement plan can be implemented, for all vehicles. It is recognized that this request may involve staff additions, and therefore, it is requested that the City endorse this.
- (10) Nash Road, between King Street and Barton Street, be prohibited to heavy traffic in excess of 50 feet.
- (11) The Ministry of Transportation and Communications be requested to amend the Highway Traffic Act to permit municipalities to restrict the length of combinations of vehicles in excess of 35 feet.
- (12) The Ministry of Transportation and Communications consider the adoption of a dual truck route system, based on the type of heavy vehicle. One system for all heavy traffic, a second system which would prohibit tractor-trailers. The Ministry to give consideration to the type of signs required to control such systems.

In addition to the above specific recommendations, the Study identifies several other issues and needs. The most notable of these is the need to construct the Industrial Perimeter Road. This and other issues and needs are further dealt with in Chapter 6, "Conclusions and Recommendations" of the Report.

Respectfully submitted,



J. Stowe, Chairman,
Sub-Committee on Trucks.

G. E. Morse,
Secretary.

CHAPTER I. INTRODUCTION

In the last few years, the City of Hamilton's Transportation and Traffic Committee has been faced with petitions, by citizen's groups and individuals, to further regulate and restrict trucks on City streets. The trucking industry, however, has indicated there are already so few streets available to them that, in some instances, there are no alternatives. Additionally, the task of decision making was difficult due to a lack of information and factual guidance. In recognition of this information gap, the City and the Province of Ontario agreed to conduct an in-depth study of the trucking situation, the present usage, the problems posed, and to explore any possible solutions.

PURPOSE OF THE STUDY

A Management Team was organized and requested to conduct the Study with the following terms of reference; namely,

- determine the type, volume and variation of trucks travelling in the various parts of the City on a typical week-day, over a 24-hour period;
- determine the classification of trucks travelling within the City, their origins and destinations, trip frequency, trip purpose and the general route(s) used;
- gather any other data required to assist the City in their approach to the trucking problem;
- review the existing truck routes, their service and usage, and make recommendations as to potential changes;

- examine existing legislation and practices regarding the use of trucks and make recommendations as to desirable changes.

From the outset, it was decided that, in the case of Hamilton, truck traffic was not a prime source of traffic congestion. Consequently, no effort was made to identify congestion points or sources, or any other traffic problems and their potential solutions. The major impact of the truck problem is the impasse reached between trucking activities and residents. These are problems of sheer volume, noise, vibration, apparent air pollution, social nuisance and the incompatibility of homes along truck routes.

The Ontario Ministry of Transportation and Communications sponsored the Study as part of their Pitfar Programme. As part of their involvement in this Study and that of the Niagara Region Transportation Review Study, an additional purpose was added; namely,

- to identify the type, weight, origin and destination of all commodity flows into and out of the City of Hamilton, as they are carried by the trucking industry.

SCOPE OF THE REPORT

This report is based primarily on immediate and relevant results of the truck study as they relate to the present problems of the City of Hamilton. Emphasis is placed on relaying information to the City in order to assist them in their deliberations. The major portion of the field work was conducted in the winter of 1972-1973, and consequently, issues occurring since then are not reported on, in detail.

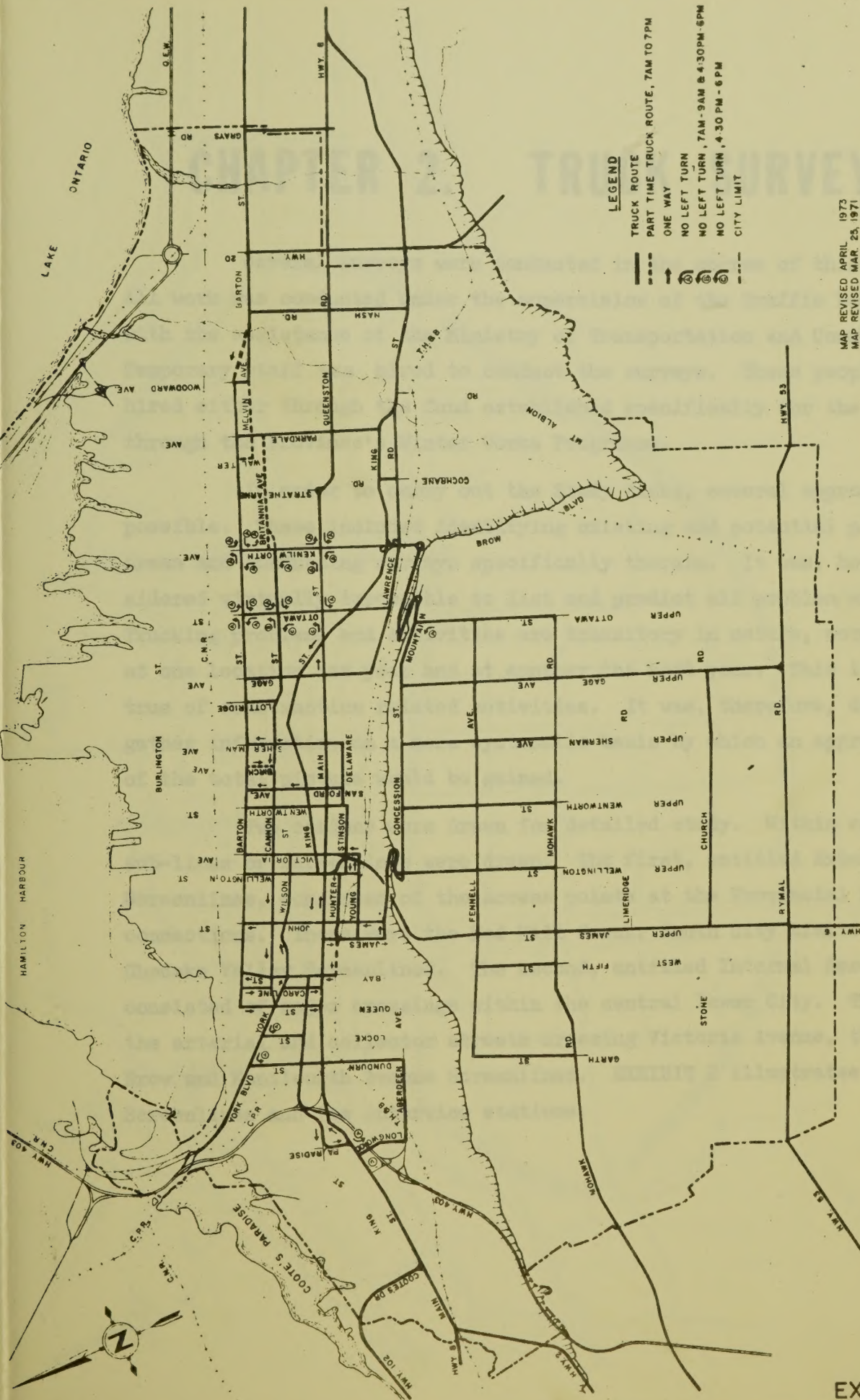
The interview forms and other information gathered has produced a very large data bank, some of which is not reported on, herein. Complete results are, however, available on request. Some of the information gathered was for the use of the Ontario Ministry of Transportation

and Communications, other information was gathered as part of the Traffic Department's on-going transportation planning programme. As subsequent analytical work is completed, subject papers or reports will be prepared and made available.

EXISTING TRUCK ROUTE SYSTEM

Within the City of Hamilton, the Traffic By-law defines "Heavy Traffic" as any vehicle with a gross weight in excess of eight thousand (8,000) pounds, excepting buses, fire fighting equipment, public utility vehicles and authorized emergency vehicles. It is Heavy Traffic or trucks that are covered by the present truck route systems.

South of Barton Street, the truck route system consists of a series of streets on which trucks are allowed to drive. These streets are illustrated in EXHIBIT 1. On all other streets, south of Barton Street, no trucks are allowed unless they are making a local delivery. North of Barton Street, in the predominantly industrial area, the opposite approach is presently operative. In this area, every street is considered a truck route unless specifically designated a non-truck route.



MAP REVISED APRIL 1973
 MAP REVISED MAR. 25, 1971
 MAP REVISED JAN. 11, 1971
 MAP REVISED MAY 26, 1969

HIGHWAYS DESIGNATED FOR USE BY HEAVY TRAFFIC

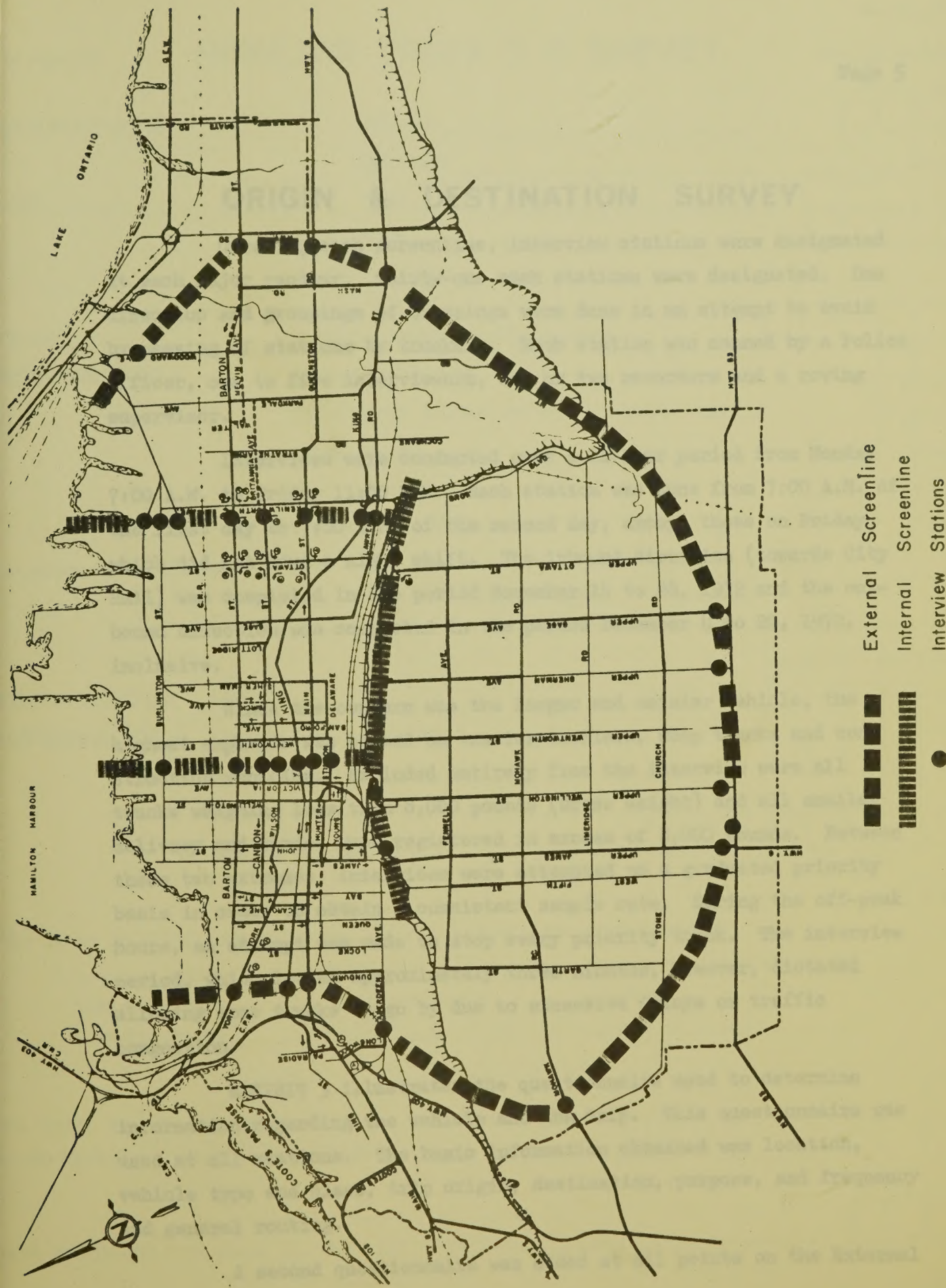
DRAWING NO.	SCALE	DATE
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CITY OF HAMILTON	TRAFFIC	DEPARTMENT

CHAPTER 2. TRUCK SURVEYS

Several surveys were conducted in the course of this study. All work was conducted under the supervision of the Traffic Department with the assistance of the Ministry of Transportation and Communications. Temporary staff was hired to conduct the surveys. These people were hired either through the fund established specifically for the Study or through the Province's Winter Works Programme.

In order to carry out the Study tasks, several approaches were possible. These included identifying existing and potential problem areas and conducting surveys specifically therein. It was, however, considered virtually impossible to list and predict all problem areas. Trucking problems and activities are transitory in nature, occurring at one location one year and at another the next year. This is especially true of construction related activities. It was, therefore, decided to gather information on a more systematic basis by which an appreciation of the total picture would be gained.

Two cordons were drawn for detailed study. Within each cordon, sub-lines or screenlines were drawn. The first, entitled External Screenlines, consisted of the access points at the Provincial Highway connections. These were the Red Hill Creek, South City Limits and Chedoke Valley Screenlines. The second, entitled Internal Screenlines, consisted of major crossings within the central lower City. These were the arterial and collector streets crossing Victoria Avenue, the Mountain Brow and Kenilworth Avenue Screenlines. EXHIBIT 2 illustrates these Screenlines and the interview stations.



ORIGIN & DESTINATION SURVEY

Crossing each screenline, interview stations were designated at each major roadway. Thirty-one such stations were designated. One direction and groupings of crossings were done in an attempt to avoid by-passing of stations by truckers. Each station was manned by a Police Officer, one to five interviewers, one or two recorders and a roving supervisor.

Interviews were conducted over a 24-hour period from Monday 7:00 A.M. to Friday 11:00 P.M. Each station was done from 7:00 A.M. of the first day to 7:00 A.M. of the second day, except those on Friday which did not have a night shift. The inbound direction (towards City Hall) was completed in the period November 14 to 28, 1972 and the outbound direction was completed in the period December 4 to 20, 1972, inclusive.

Since the concern was the larger and noisier vehicle, the highest emphasis was placed on tractor-trailers, dump trucks and construction vehicles. Excluded entirely from the interview were all trucks weighing less than 8,000 pounds (Gross Weight) and all smaller delivery and trade vans registered in excess of 8,000 pounds. Between these two extremes, interviews were attempted on a graduated priority basis in order to obtain a consistent sample rate. During the off-peak hours, an attempt was made to stop every priority truck. The interview period, which lasted approximately three minutes, however, dictated allowing some trucks to go by due to excessive delays or traffic congestion.

EXHIBIT 3 illustrates the questionnaire used to determine information regarding the vehicle and the trip. This questionnaire was used at all stations. The basic information obtained was location, vehicle type and class, trip origin, destination, purpose, and frequency and general routing.

A second questionnaire was added at all points on the External

OF HAMILTON

HAMILTON TRUCK O.D. SURVEY

DEPT. OF TRAFFIC

INTERVIEWER: _____

STATION: _____

DIRECTION: _____

NAME: _____

TIME: _____

DATE: _____

3		
		6
7		
11		

VEHICLE
INFORMATION:

ONTARIO LICENCE PLATE NUMBER:

ONTARIO P.C.V. TYPE

REGISTERED GROSS WEIGHT (000's Lbs.)

AXLE COUNT

UNIT COUNT:

* VEHICLE CLASSIFICATION:

* VARIOUS VEHICLE CLASSES:

1. BOX

2. VAN

3. STAKE / FLATBED

4. TANK

5. CEMENT MIXER

6. CONTAINER

7. AUTO CARRIER

8. OTHER: SPECIFY _____

15				
				21
				23
				25
				27
				28

TRIP / DRIVER
INFORMATION:

ORIGIN: _____

TYPE OF ESTABLISHMENT: _____

DESTINATION: _____

TYPE OF ESTABLISHMENT: _____

BASE OF OPERATIONS: _____

29				
				34
36				
				41
43				

FOR WHAT PURPOSE ARE YOU GOING TO THE PARTICULAR DESTINATION ?

1. PICK UP GOODS.

3. PICK UP & DELIVER GOODS.

5. RETURN TO BASE OF OPERATIONS.

2. DELIVER GOODS.

4. TRANSFER GOODS.

6. SERVICE.

7. OTHER: SPECIFY _____

48

BY WHAT MAJOR ROUTES:

(MAJOR ROUTES = Hwy. 2,6,8,20,56,403 & Q.E.W.)

a) DID YOU ENTER HAMILTON? _____

b) ARE YOU LEAVING HAMILTON? _____

49
50

HOW OFTEN DO YOU MAKE A TRIP LIKE THIS? _____

51		
----	--	--

IS THIS A PIGGY-BACK OPERATION?

YES ☐

NO ☐

54

EXHIBIT 3.

Screenline. This consisted of a set of questions aimed at determining commodity flow rather than vehicle flow. The three major commodities being carried were identified and information regarding their weight, shipper and consignee were obtained. This information is available and presently being used by the Ministry of Transportation and Communications. No analysis of that second questionnaire has been included for the purposes of this report.

VEHICLE COUNTS

In addition to the actual interviews of the larger and noisier trucks, a full classification count was taken at each interview station. The classes used were; Passenger Cars, Single Unit Light (2 axle) Truck, Single Unit Heavy, Tractor-Trailer (1 trailer) with number of axles specified and Three Unit Tractor-Trailers, again with the number of axles recorded. These classification counts were summarized at half-hour intervals at each station, for the entire period that interviews were being conducted.

EXHIBIT 4 illustrates various classes of trucks. The first, Single Unit Light, type of vehicle was not interviewed at all. The second, third and fourth type were interviewed on a graduated priority basis.

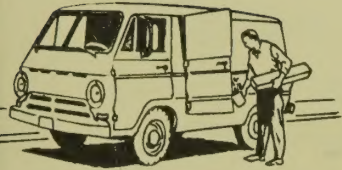
MISCELLANEOUS SURVEYS

In addition to the basic interviewing and counting surveys, a series of other studies were conducted. These were primarily aimed at specific issues and consisted mostly of telephone interviews. These studies included;

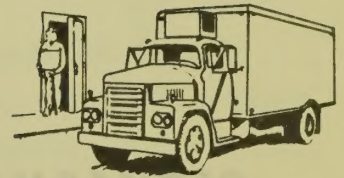
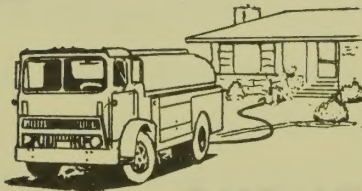
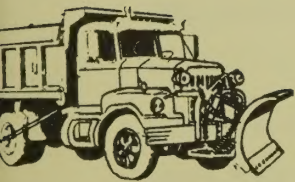
- telephone interviews of several truck generators to ascertain their methods of operation, access requirements and service areas. These included

VARIOUS TYPES OF TRUCKS

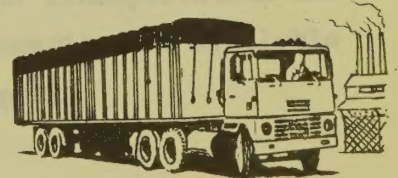
LIGHT TRUCKS NOT INTERVIEWED



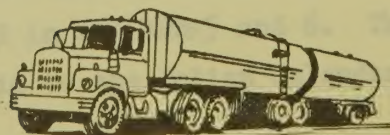
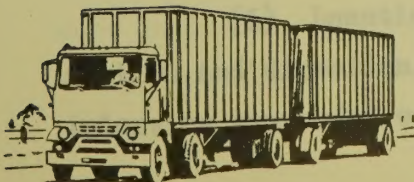
SINGLE UNIT HEAVY TRUCKS (INTERVIEWED)



DOUBLE UNIT HEAVY TRUCKS (INTERVIEWED)



TRIPLE UNIT HEAVY TRUCKS (INTERVIEWED)



dairies, bakeries, trucking firms, moving and storage firms, quarries, home and commercial fuel carriers, selected industrial and manufacturing industries;

- telephone surveys of commercial and industrial establishments, specifically not on truck routes, to ascertain their night-time truck access requirements;
- interviews with leading trucking firms, commercial outlets, enforcement agencies and drivers to explore the various problems and solutions.

CHAPTER 3. SURVEY ANALYSIS

The Truck O.D. Survey questionnaire has been coded, expanded and compiled onto computer tape, and is available either through the City of Hamilton or through the Ontario Ministry of Transportation and Communications. Various tabular and graphical summaries are available and are highlighted in this and the following chapter.

QUESTIONNAIRE CODING

The following description details the method used in coding the Truck O.D. Survey questionnaire.

(1) Location Information - A code was assigned to each station and direction, as illustrated in EXHIBITS 5 and 6. The time of interview was coded on a 24-hour basis to the Julian Calendar dates.

(2) Vehicle Information - Generally the actual number recorded or assigned codes were used for the coding of licence numbers, P.C.V. type, gross weight, axle count, unit count and vehicle class.

(3) Trip/Driver Information - A detailed traffic zoning system was used to record the origin, destination and base of operation locations. Inside Hamilton, this consisted of 114 Neighbourhoods (Planning Districts). Outside Hamilton, but within the TARMS (Toronto Area Regional Municipality Study) study area, the traffic zones corresponded to the TARMS zones. Outside this immediate area a Provincial and State (United States) zoning system was used, in keeping with the Ontario Ministry of Transportation and Communications standard zones. Two compressed Zone-Region and Zone-District association lists have been defined for convenience of data manipulation.

Establishment types were coded to the Standard Industrial Classification Manual, 1970 Edition, Statistics Canada. Commodity types were coded to the Standard Commodity Classification Manual, 1972 Edition, Statistics Canada. Codes were added for residential and recreational land uses. Again the actual number or assigned codes were used for trip purpose, frequency (on a monthly basis), routing and piggy-back operation.

EXPANSION OF INFORMATION

A total of 11,077 truck trip interviews were obtained as a result of the Truck O.D. Survey questionnaire portion of the Study. From the classification counts, it was determined that 26,564 interviewable truck trips actually crossed the various screenlines during the survey period. This amounted to a sample of 42% which is considered excellent, since most present-day traffic planning studies aim at only a 2% to 8% sample rate. This high sample rate was, however, sought since there were no historical records, no detailed surveys in other communities, and every indication that trucking activities are very erratic, unlike person-trips which are very predictable.

Several methods were explored by which the sample could be expanded to the actual number of interviewable trucks. These included expansion by trip frequency, by truck class, or by truck units. Due to the high sample rate, it was, however, decided to adopt the simpler approach of expanding the sample at each station, in each direction to the expected volume. The sample was compiled into hourly volumes and expanded to the expected hourly volume. When the hourly expansion factors were consistent over a given time period, in a given direction, for a given station, a batch factor was used. The lowest factor used was 1.00 and the highest 7.67. The average factor used was in the order of 2.05.

No attempt has been made to expand the interviews beyond the November-December interview period. Insufficient information is presently available to determine average annual figures. Similarly, no attempt has been made to include the "non-interviewable" trucks, the smaller vans, pick-ups and light duty trucks. The study results, however, are considered an adequate representation of the trucking movements of heavy trucks within the City of Hamilton.

EXHIBITS 5 and 6 illustrate the number of available questionnaires, the truck volumes they represent, and the number of small truck trips they don't represent. It is evident that, on an average, there are almost twice as many small trucks as there are large trucks. Indeed on some streets studied, such as Nash Road, it was determined that tractor-trailers are really not the problem, but rather it is the large volume of smaller service and construction vehicles. These are illustrated for each screenline crossing, sub-totalled on the screenline and summarized on the cordon.

EXTERNAL CORDON DATA SUMMARY

EXHIBIT 5.

(TWO-WAY VOLUMES DURING SURVEY PERIOD)

SCREENLINE	STREET CROSSING	NUMBER OF INTERVIEWS	TOTAL TRUCKS INTERVIEWABLE	SMALL TRUCKS	TOTAL TRAFFIC
a) Red Hill Creek					
	1. Woodward Ave.	462	1,054	1,051	10,527
	2. Burlington St.	706	3,520	1,604	22,028
	3. Barton St.	424	1,003	1,624	12,439
	4. Queenston Rd.	230	497	1,959	26,790
	5. King St.	222	466	1,594	20,360
	Sub-total	2,044	6,540	7,832	92,144
b) South and West Mountain					
	6. Upper Gage Ave.	181	366	506	4,169
	7. Upper Sherman Ave.	8	11	225	2,331
	8. Upper Wellington St.	18	24	61	454
	9. Upper James St.	271	621	1,496	16,173
	10. Rymal Rd.	501	1,040	1,052	9,163
	11. Mohawk Rd.	300	483	625	7,181
	Sub-total	1,279	2,545	3,965	39,471
c) Chedoke Valley					
	12. Aberdeen Ave.	128	181	752	16,587
	13. Main-King Sts.	881	2,425	3,854	63,433
	14. York Blvd.	672	1,958	1,910	28,446
	Sub-total	1,681	4,564	6,516	108,466
Total External Screenline		5,004	13,649	18,313	240,081

INTERNAL CORDON DATA SUMMARY

EXHIBIT 6.

(TWO-WAY VOLUMES DURING SURVEY PERIOD)

SCREENLINE	STREET CROSSING	NUMBER OF INTERVIEWS	TOTAL TRUCKS INTERVIEWABLE	SMALL TRUCKS	TOTAL TRAFFIC
a) Mountain Brow	15. Claremont Access	466	738	1,655	40,488
	16. Jolley Cut Access	322	484	1,645	31,507
	17. Flock Road Access	329	482	1,106	17,334
	Sub-total	1,117	1,704	4,406	89,329
b) Victoria Avenue	18. Burlington St.	957	1,694	1,345	13,606
	19. Barton St.	552	1,144	1,599	16,582
	20. Cannon-Wilson Sts.	457	1,211	2,420	29,271
	21. Main-King Sts.	366	1,224	3,769	59,185
	22. Stinson St.	33	65	1,073	17,745
	Sub-total	2,365	5,338	10,206	136,389
c) Kenilworth Avenue	23. Burlington St.	706	1,637	1,013	10,410
	24. Barton St.	405	851	1,718	24,699
	25. Cannon St.	112	207	1,123	11,687
	26. Main St.	216	430	1,787	27,934
	27. King St.	207	295	1,409	20,465
	28. Lawrence Rd.	57	81	427	8,301
	29. Beach Rd.	300	640	339	3,464
	30. Industrial Dr.	588	1,732	920	9,900
	Sub-total	2,591	5,873	8,736	116,860
Total Internal Screenline		6,073	12,915	23,348	342,578

CHAPTER 4. SURVEY RESULTS

TRUCK VOLUME & VARIATION

EXHIBIT 5 indicates that approximately 13,650 large and heavy trucks daily enter and leave the City, and an additional 18,300 smaller trucks also cross over the City boundaries. This represents more than one truck trip, coming into and out of the City daily for every ten citizens living within the City. An even more impressive figure is the fact that, on an average basis, there is one truck trip for every 6.5 car trips, crossing the external cordon.

The percentage of truck trips, of very heavy trucks, to the total traffic varies considerably from station to station. On Aberdeen Avenue, these large vehicles represent only 1.1% of the traffic, whereas on Burlington Street almost 16% of the traffic is large trucks. It is also noted that the ratio of large trucks to small trucks varies considerably. On the streets leading to the Provincial Highway system, the volume of large trucks is as great, or greater than, the volume of small trucks. However, on internal circulation routes, such as Queenston Road, King Street, Aberdeen Avenue, Upper Sherman Avenue, etc., the volume of small trucks is more than four times that of the larger trucks.

EXHIBIT 6 illustrates similar statistics except that, in almost all cases, the volume of small trucks is greater by almost two-fold, than the volume of large trucks. The Mountain-Brow screenline has the lowest volume of large trucks of all screenlines with only 1,704 trucks, whereas the East End (Red Hill Creek) has the highest volume of large trucks. The highest volume of small trucks occurs, as expected, in the downtown area. These represent the many smaller delivery and service vans in the area.

The above facts indicate that, due to its central location and industrial/commercial nature, Hamilton has a high volume of trucks. Additionally, the statistics indicate caution, since, in many areas, the

problems created may not be by the larger vehicles, but rather by the smaller vehicles which are exempted from the present By-law governing Heavy Traffic. These vehicles also tend to be individually owned rather than be controlled by large fleet operators. The overwhelming presence of the smaller trucks is further accentuated if the number of truck units are compared throughout the day. This variation of the hourly volume of each unit type of truck is illustrated in EXHIBIT 7. With the exception of the early morning period, between 2:30 A.M. and 4:30 A.M., the volume of small trucks is greater than any other unit type of truck.

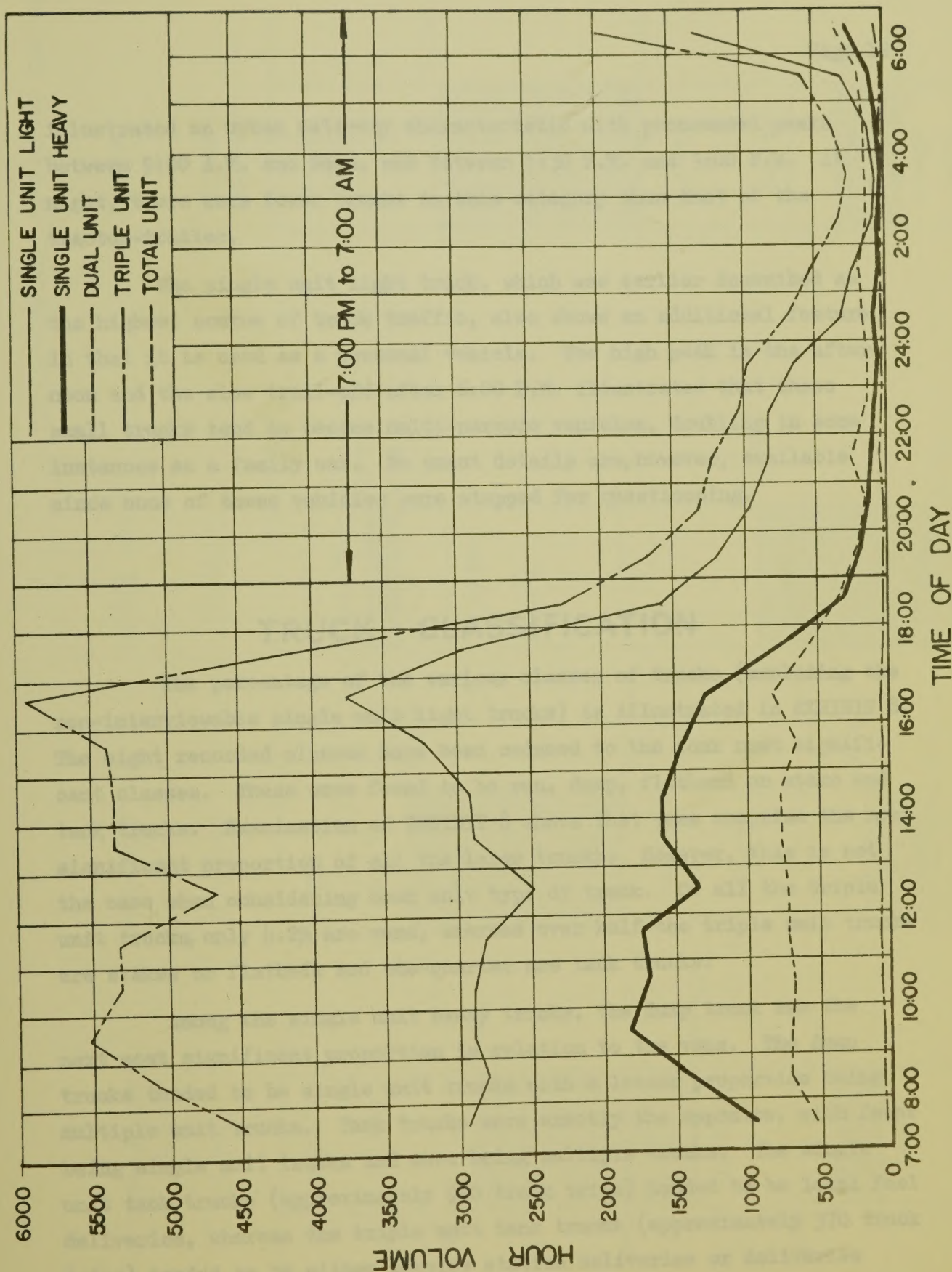
Determined from EXHIBIT 7, and similar graphical illustrated for the various screenlines (see Appendix) are various other facts. In virtually all areas of the City, the volume of tractor-trailers, with two trailers, is relatively constant over the entire day. This may be due to the fact that a large proportion of these carry steel, steel products, raw materials, or liquid fuels, all of which are related to industries working around the clock. In total, these large transport trucks comprise only 5% of the truck traffic and less than 0.4% of the total traffic.

Dual Unit, or single trailer, trucks comprise the next highest volume of trucks. These trucks follow a more urban delivery characteristic in that there is a large volume of traffic during the daylight, dropping off by approximately two-thirds at night. Unlike the more predictable person-trips, of people going to work and shopping etc., there are no significant peaking characteristics shown by the volume of tractor-trailers. Several screenlines did show mild peaks which tended to occur between 9:00 A.M. and 11:30 A.M., or between 1:30 P.M. and 3:00 P.M. This may be characteristic of the delivery and shift schedules of several large delivery and manufacturing industries.

The most significant proportion of the interviewable or heavy trucks was the single unit or straight truck. The bulk of these are local delivery trucks which tended to have shorter trip distances, higher numbers of daily trips and smaller pay-loads. These trucks

TRUCK VOLUME BY TIME OF DAY

LOCATION: ALL INTERVIEW STATIONS



illustrated an urban delivery characteristic with pronounced peaks between 9:00 A.M. and Noon, and between 1:30 P.M. and 3:00 P.M. At night, there were fewer trucks in this category than that of the tractor-trailer.

The single unit light truck, which was earlier described as the highest source of truck traffic, also shows an additional feature in that it is used as a personal vehicle. The high peak in the afternoon and the slow trail-off after 6:00 P.M. illustrates that these small trucks tend to become multi-purpose vehicles, doubling in some instances as a family car. No exact details are, however, available since none of these vehicles were stopped for questioning.

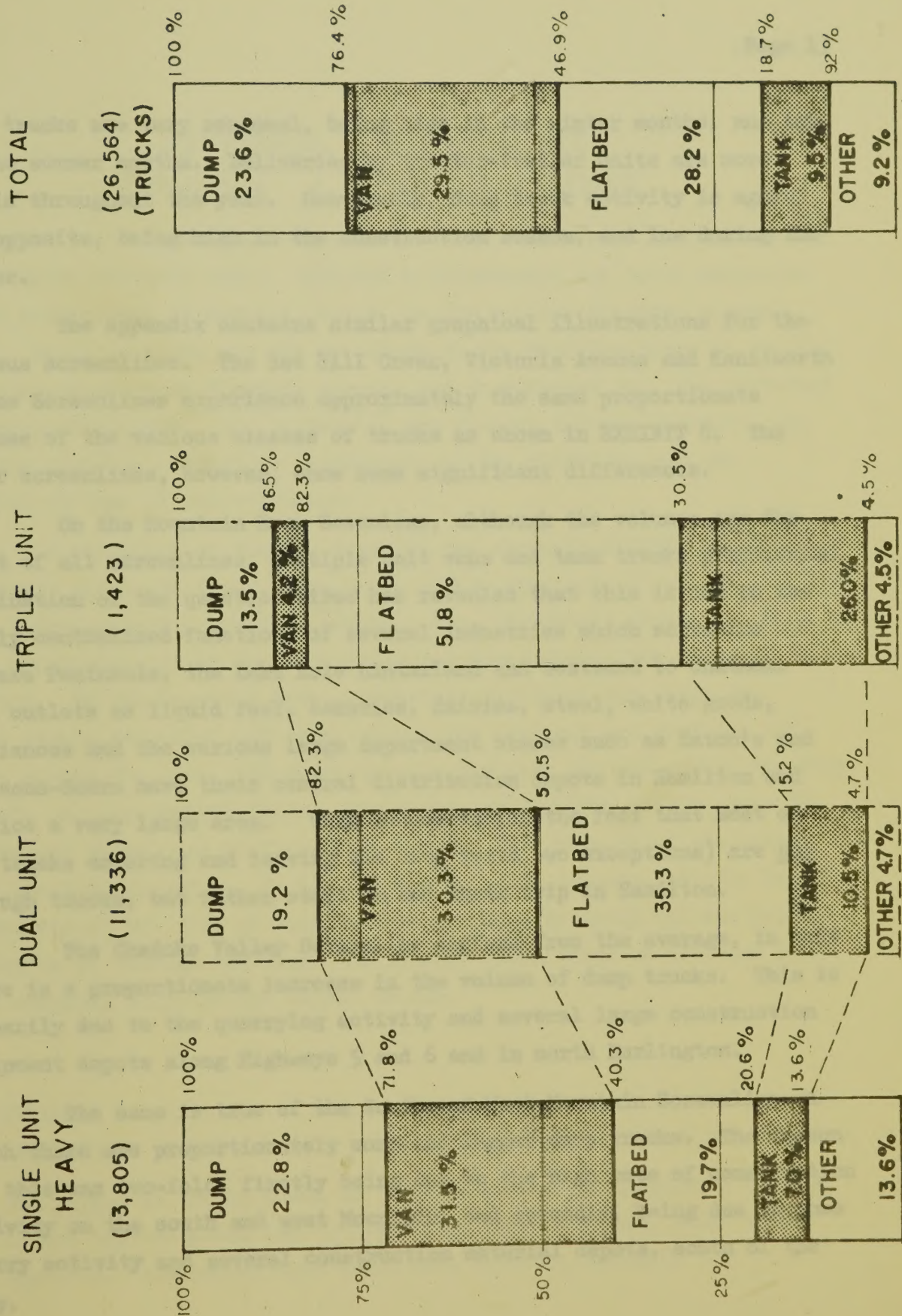
TRUCK CLASSIFICATION

The percentage of the various classes of trucks (excluding the non-interviewable single unit light trucks) is illustrated in EXHIBIT 8. The eight recorded classes have been reduced to the four most significant classes. These were found to be van, dump, flatbed or stake and tank trucks. Examination of EXHIBIT 8 shows that vans comprise the most significant proportion of all the large trucks. However, this is not the case when considering each unit type of truck. Of all the triple unit trucks, only 4.2% are vans, whereas over half the triple unit trucks are stakes or flatbeds and one-quarter are tank trucks.

Among the single unit heavy trucks, the dump truck was the next most significant proportion in relation to the vans. The dump trucks tended to be single unit trucks with a lesser proportion being multiple unit trucks. Tank trucks were exactly the opposite, with fewer being single unit trucks and more being multiple trucks. The single unit tank trucks (approximately 960 truck trips) tended to be local fuel deliveries, whereas the triple unit tank trucks (approximately 370 truck trips) tended to be either service station deliveries or deliveries beyond the City. Indications are that local deliveries by the smaller

TRUCK CLASSIFICATION BY NUMBER OF UNITS

LOCATION ALL INTERVIEW STATIONS



tank trucks are very seasonal, being high in the winter months, and low in the summer months. Deliveries by tractor-trailer units are more stable throughout the year. Conversely, dump truck activity is again the opposite, being high in the construction season, and low during the winter.

The appendix contains similar graphical illustrations for the various screenlines. The Red Hill Creek, Victoria Avenue and Kenilworth Avenue Screenlines experience approximately the same proportionate volumes of the various classes of trucks as shown in EXHIBIT 8. The other screenlines, however, show some significant differences.

On the Mountain Brow Sceenline, although the volumes are the least of all screenlines, multiple unit vans and tank trucks predominate. Examination of the questionnaires has revealed that this is due to the highly centralized functions of several industries which serve the Niagara Peninsula, the Lake Erie hinterland and westward to Chatham. Such outlets as liquid fuel, bakeries, dairies, steel, white goods, appliances and the various large department stores such as Eaton's and Simpsons-Sears have their central distribution depots in Hamilton and service a very large area. This accounted for the fact that most of the trucks entering and leaving the City (with two exceptions) are not through trucks, but rather start or end their trip in Hamilton.

The Chedoke Valley Screenline differs from the average, in that there is a proportionate increase in the volume of dump trucks. This is primarily due to the quarrying activity and several large construction equipment depots along Highways 5 and 6 and in north Burlington.

The same is true of the South and West Mountain Screenline on which there are proportionately more and larger dump trucks. The reason for this was two-fold, firstly being due to the high rate of construction activity on the south and west Mountain, and secondly, being due to some quarry activity and several construction material depots, south of the City.

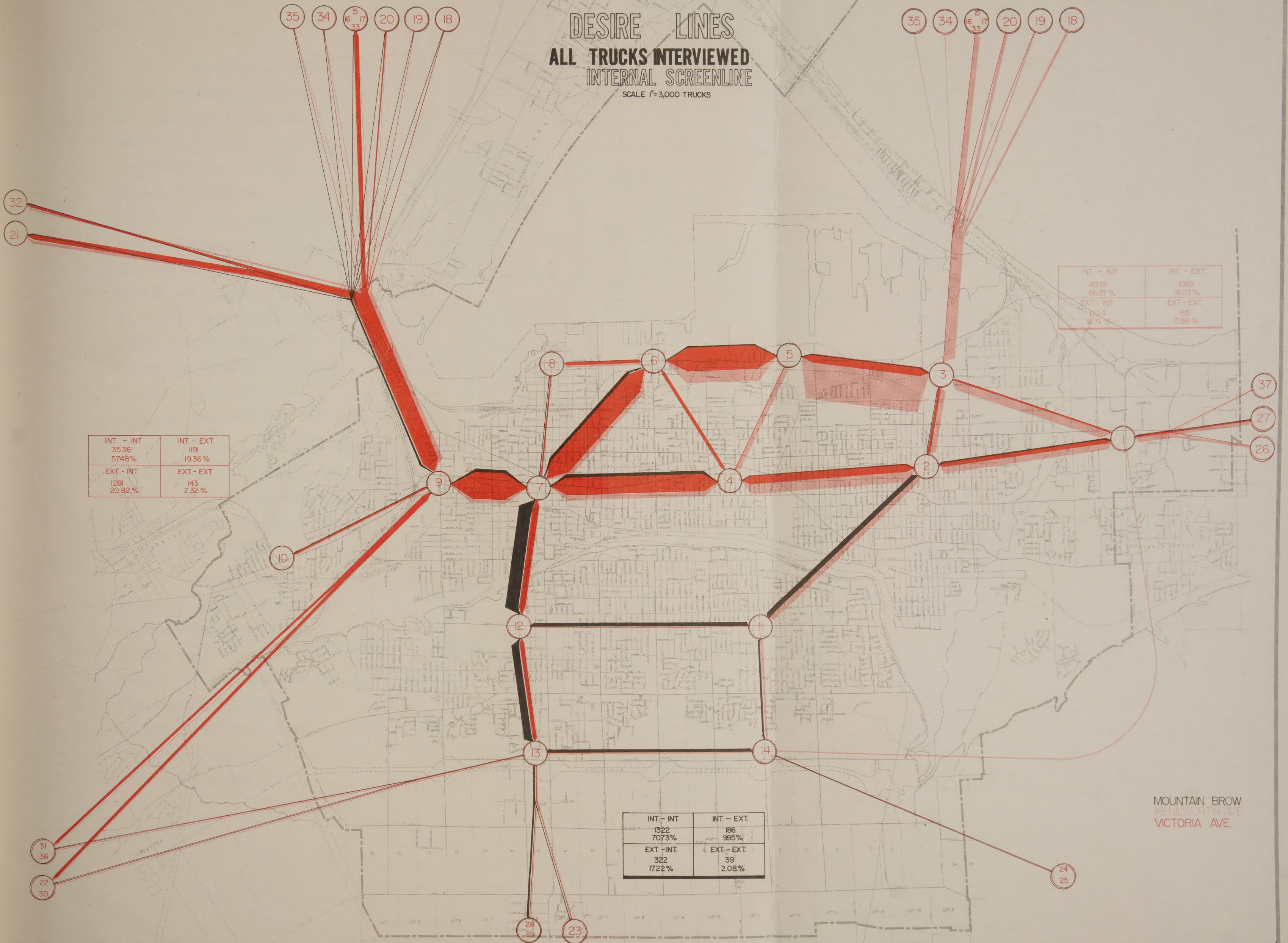
INTERNAL SCREENLINE ORIGINS & DESTINATIONS

The detailed origin-destination tables have been reduced into a thirty-seven district table. EXHIBIT 9 illustrates the total movements of the interviewed classes of trucks, on the various internal screenlines. Shown in black are the crossings at the Mountain Brow; in solid red, the crossings at Victoria Avenue, and in screened red, the crossings at Kenilworth Avenue. All volumes⁽¹⁾ are 24-hour two-way volumes. The Appendix contains a detailed description of the districts and the detailed numbers of the crossings.

Tabulations of through trips⁽²⁾ are shown in EXHIBIT 9. Int. (Internal) refers to those trips which either originate at or are destined for a location within the City Limits. Ext. (External) refers to those trips originating at or destined for a location outside the City of Hamilton. On the Mountain Brow, approximately 71% of the trips are purely within the City, 10% start within the City and are destined for points beyond the City, 17% start outside the City and end within the City and only 2% are through trips. Similarly, at Victoria Avenue, only 2% are through trips, and on Kenilworth Avenue, less than 1% of the truck trips are through trips. It is, therefore, quite evident that the internal streets of the City of Hamilton are not used by truck drivers merely wanting to go through the City. No through truck trips at all were found to be avoiding tolls on the Skyway Bridge.

- (1) EXHIBITS 9 and 11 are to a scale of approximately 1" = 9,000 vehicles. EXHIBITS 10 and 12 are to a scale of approximately 1" = 6,000 vehicles.
- (2) The volume of trucks shown in the tabulations on EXHIBITS 9 through 12 are approximately 10% too high. For exact volumes, refer to the Appendix. The percentages shown are, however, correct.

DESIRE LINES ALL TRUCKS INTERVIEWED INTERNAL SCREENLINE SCALE 1"=3,000 TRUCKS



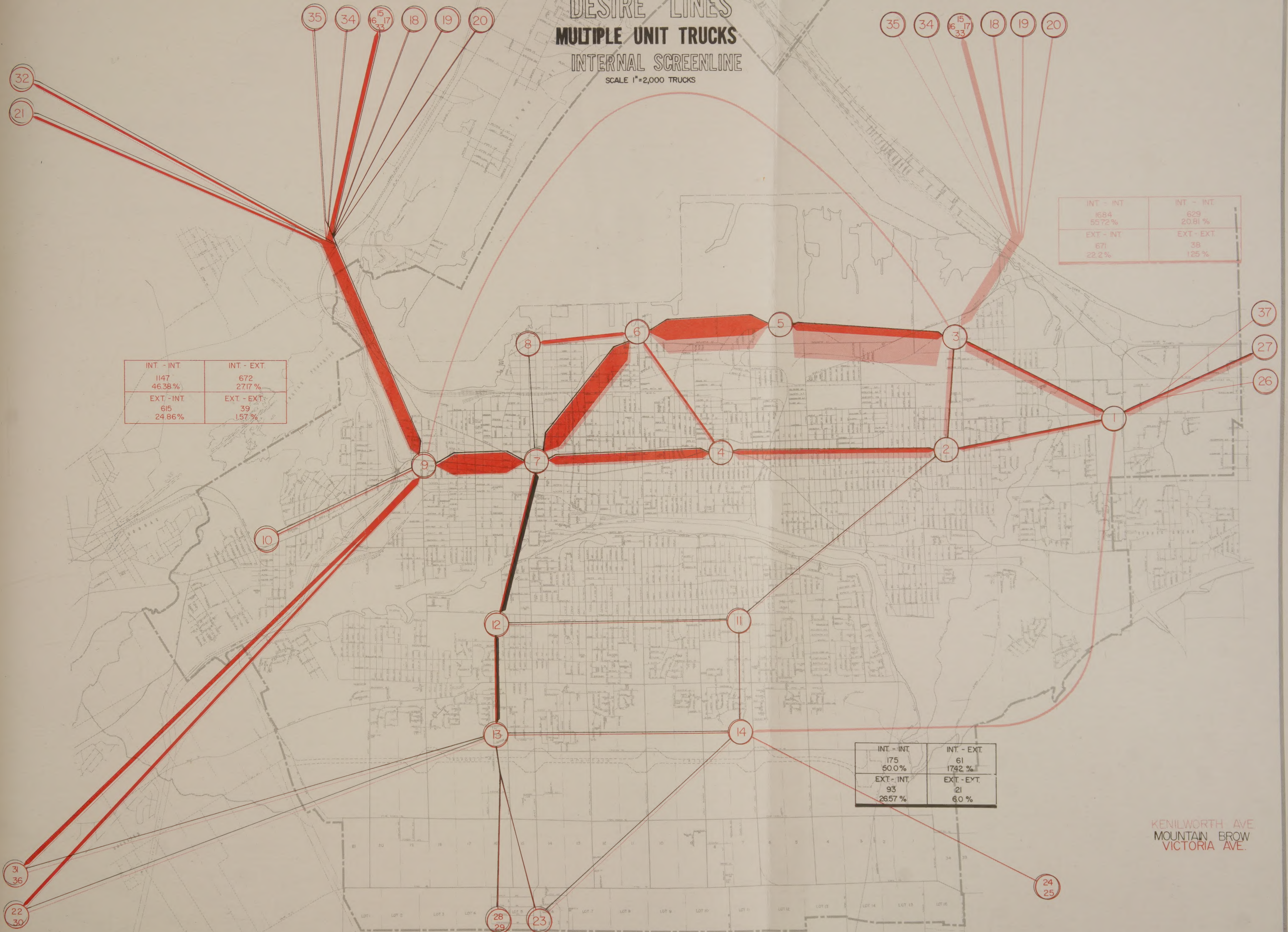
The City of Hamilton's downtown and lower City trucking problems are primarily a result of its own industrial nature, the fact that many central depots and distribution warehouses are located here, and the fact that the industrial areas, in which these industries and depots are located within the City, do not have a good and protected road system leading to the highways. Depending on the location, 25 to 40% of the truck trips require access only to the highways. On the Victoria Avenue Screenline, 40% of the trucks merely want good access to and from Highway 403. It should also be noted that not even a majority of the trucks leaving the City towards Highway 403 are destined for the Queen Elizabeth Way. Approximately 30% are destined for Brantford, London and other points south-west. Approximately 35% are destined for Cambridge, Kitchener, points along Highway 6 and points further north-west. Approximately 10% are destined for Burlington, Oakville and Mississauga, and only 25% are destined for points further north and north-east.

Sherman Avenue is the approximate location at which trips destined north and north-east (generally the greater Toronto area) divide. Drivers starting or ending their trip to the east of Sherman Avenue, generally use the Skyway Bridge. Drivers starting or ending their trip to the west of Sherman Avenue, use Highway 403.

EXHIBIT 10 illustrates information similar to that of EXHIBIT 9 with the exception that information regarding tractor-trailers or multiple units only is depicted. Again, even among these larger vehicles, a very small proportion and volume of trucks are through trucks. Sherman Avenue is also found to be the approximate break point for trips destined north and north-east. Indeed, several multiple units starting around Strathearne Avenue and Burlington Street, destined for Brantford and points south-west, actually went around the Skyway Bridge and came back via Highway 403.

DESIRE LINES MULTIPLE UNIT TRUCKS INTERNAL SCREENLINE

SCALE 1"=2,000 TRUCKS



EXTERNAL SCREENLINE ORIGINS & DESTINATIONS

EXHIBITS 11 and 12 illustrate the volume of truck trips crossing the External Screenlines. EXHIBIT 11 shows all truck types interviewed and EXHIBIT 12 only the combination or multiple units.

Several points of similarity with the Internal Screenlines appear on the External Screenlines also. These are;

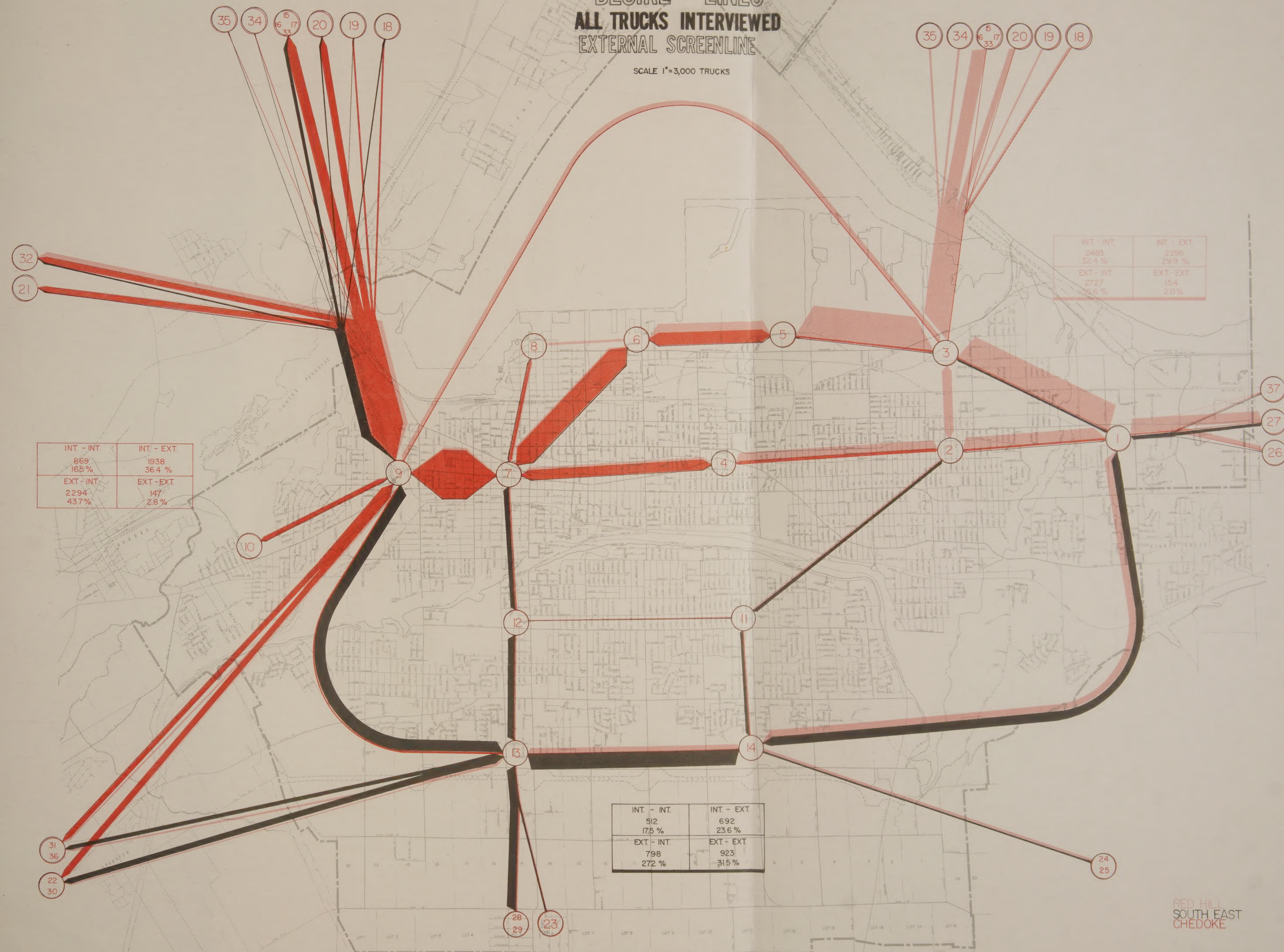
- Sherman Avenue is a consistent approximate division area for trucks destined to points north and north-east.
- On the lower City screenlines (Chedoke Valley and Red Hill Creek), a small percentage of the trucks are through trips.
- Trucks leaving the City to the west are approximately evenly divided between Brantford and points south-west, Clappison's Corners and points north-west and Burlington, or points north and north-east.

Several points of difference, worthy of mention, however, do arise. These include;

- A significant proportion of the trucks leaving the east end of the City originate east of Kenilworth Avenue. This is due primarily to the fact that many trucking firms are located near Parkdale Avenue, Woodward Avenue and Nash Road.
- A significant proportion of the trips leaving the City in the east end actually go around the Bay and double back to Highway 6 or to Brantford. Most of these are tractor-trailer units originating east of Strathearne Avenue.
- The South and West Mountain Screenline is the only screenline showing a significant proportion of through truck trips. These trips were recorded primarily on Rymal Road, Upper James Street and Mohawk Road. The two most significant volumes that

DESIRE LINES ALL TRUCKS INTERVIEWED EXTERNAL SCREENLINE

SCALE 1"=3,000 TRUCKS



DESIRE LINES MULTIPLE UNIT TRUCKS EXTERNAL SCREENLINE

SCALE 1"=2,000 TRUCKS

INT - INT	INT - EXT
1023	1785
21.35 %	37.25 %
EXT - INT	EXT - EXT
1878	105
39.19 %	2.19 %

INT - INT	INT - EXT
158	939
6.2 %	37.1 %
EXT - INT	EXT - EXT
1353	78
53.5 %	3.0 %

INT - INT	INT - EXT
125	258
8.4 %	17.5 %
EXT - INT	EXT - EXT
405	685
27.4 %	46.5 %

SOUTH EAST
 RED HILL
 CHEDOKE

this through movement consists of is the Highway 2-53-20 and Queen Elizabeth Way link, and the Highway 6-Upper James Street-Mohawk Road and Highway 403 link.

Regarding the Highway 53 link, the only long-term solution is the construction of the Mountain-Red Hill Creek Freeway.

Regarding the Mohawk Road link, again, the only long-term solution is the construction of a freeway link from Upper James Street to Highway 403.

It has been suggested that banning trucks from Mohawk Road would re-route traffic onto Highway 53. If this were true, it would only aggravate the people, presently and in future, living along Rymal Road and Highway 53. However, using conventional diversion calculation methods, it is estimated that, at night, most of these trucks would go through the City along Upper James Street, Wellington Street-Victoria Avenue, Cannon Street and York Street⁽³⁾. The Mohawk Road solution should not be to aggravate the lower City problems.

(3) The highway route is more than twice the distance (12.6 miles further) and takes 25% extra time.

CHAPTER 5. NIGHT-TIME BAN

Consideration of totally banning non-emergency trucks on non "Heavy Traffic Routes", between the hours of 11:00 P.M. and 7:00 A.M., was considered. This approach has been suggested, in response to citizens' complaints of night-time truck noise and intrusion. The most significant advantage of such an approach is that it creates a clear enforcement procedure. At present, local deliveries are allowed, whereas this approach would prohibit any non-emergency vehicle.

NATURE OF THE PROBLEM

On close examination, the proposed night ban would, however, not solve the major concerns. Three problem areas have been identified and the night ban would not adequately satisfy these.

(1) Residential Establishment Along Truck Routes:

The prime source of complaints regarding night-time truck traffic are residents living along truck routes. These include residents along York Street, King Street, Bay Street, Wentworth Street, Nash Road, Mohawk Road and Upper Wellington Street. None of these people would find relief if trucks are banned from other streets which would only ensure that more trucks are on their street. Very few complaints have been brought to our attention regarding truck noise on non-truck routes.

The study recommendations would more adequately satisfy these problems; namely to,

- obtain enabling legislation to regulate the use of trucks in excess of 35 feet. This would allow the City to develop a dual truck route system, whereby tractor-trailers would be allowed only on selected streets.

- make more extensive use of night-time prohibitions which eliminates non-local delivery truck trips from non-commercial streets, such as Nash Road and Bay Street (south of Main Street).
- develop a viable 24-hour truck route system including the construction of the Industrial Perimeter Road, which would, by itself, eliminate the majority of the tractor-trailers, south of Barton Street, on Sherman Avenue, Birch Avenue and Wentworth Street, and also a significant portion of those on Wellington Street, Victoria Avenue, Cannon Street, Wilson Street, York Street, King Street and Main Street.

(2) North of Barton Street:

The second major source of complaints regarding night-time and day-time truck traffic are residents living in the industrially zoned areas north of Barton Street. Industry has voiced the opinion that the houses are the incompatible land uses, and it is houses that should not be there. If the total night-time ban proposal were adopted, then, due to the predominance of the commercial and industrial land uses north of the Canadian National Railway Mainline, the present two-fold system would have to be continued. This would mean that south of Barton Street (or the Canadian National Railway Mainline), the ban would apply, but north of Barton Street, it would not. Clearly, none of the residents north of Barton Street would be placated by this approach.

The study recommendation to treat north of Barton Street the same as south of Barton Street; namely, to designate specific streets as truck routes and allow local access only to others will tend to eliminate non-local truck trips, thereby reducing the burden on residents, and at the same time not stifle industry.

(3) Truck Storage in Residential Areas:

The last and minor source of complaints are residents objecting to neighbours who bring their trucks home. The night-time ban approach would be effective in dealing with this problem although it was considered minor and can be handled by other means.

The study recommendations would also overcome this problem; namely to,

- Create a 24-hour Traffic By-law Enforcement Squad. Insufficient enforcement staff has resulted in the situation where there is no organized approach to traffic enforcement at night. Sufficient By-laws presently exist to restrict trucks on local streets and from parking overnight, but there is no one to enforce them.

- Review the Planning By-law prohibiting the storage of trucks on residential property in residentially zoned areas. The present By-law was found to be inadequate and a review of it should produce a By-law that would be enforceable and would eliminate the problem of storing trucks in side and backyards.

NIGHT ~ TIME TRUCKING NEEDS

In addition to the previously mentioned arguments that the night-time ban approach would not solve the real problems, there are a number of reasons to avoid such an approach.

(1) Night-time Deliveries:

In response to social, economic and traffic pressures, many industries and commercial outlets have either gone towards 24-hour deliveries or to night-time deliveries. If these activities were to be curtailed, adverse economic impacts, not only to the firms, but also to consumers, would evolve. This would place the City into a potentially dangerous position, since industry would be able to sue the City and consumers would balk at increased costs.

(2) Round the Clock Industries:

Some commercial and industrial activities take place around the

clock. For some, 24-hour truck access is essential. A telephone survey of all commercial and industrial outlets south of Barton Street and situated on non-truck routes indicated that approximately thirty (30) streets would have to be added to the existing truck route system to comply with present practices. If this many streets were added, then the whole concept of a permissive truck route system would falter.

The above arguments point out the impracticality and liability of a night-time ban and that the real problem(s) would not be resolved, but rather accentuated. It is, therefore, concluded that no valid support can be substantiated for an application to the Province of Ontario for legislation to outrightly ban trucks at specific time periods, on non-truck routes.

CHAPTER 6.

CONCLUSIONS AND RECOMMENDATIONS

Contained in the letter of transmittal are various specific recommendations for the Transportation and Traffic Committee's consideration. These recommendations have resulted from the following considerations:

CHANGES TO THE TRUCK ROUTE SYSTEM

It is concluded that the present definition of "Heavy Traffic", namely, vehicles weighing in excess of 8,000 gross pounds, should be retained and that the concept of the permissive system presently south of Barton Street should also be retained. This permissive system indicates that no "Heavy Traffic" is allowed on any street unless that street is specifically designated a truck route or unless the drive is making a local delivery. The following recommendations are made with respect to additions and deletions to the existing designated truck routes.

(1) The Mountain Industrial Park is presently underway. Approximately 75 acres are owned by the City and services are expected late this year. At present, none of the roadways leading to or located within this industrial park are truck routes. It is recommended that initially Upper Ottawa Street and Stone Church Road be designated truck routes and that other streets be added as development progresses.

(2) It is recommended that in the area north of Barton Street, a truck route system be established consistent with that south of Barton Street. The arterial streets and collector streets will be designated truck routes and local access only will be allowed on other streets.

(3) Due to changes in the street system, traffic patterns and the desire to protect viable residential neighbourhoods, several streets are recommended for deletion from the present route system. These are listed in Item (2) of the detailed recommendations in the letter of transmittal.

NIGHT ~ TIME RESTRICTIONS

It is concluded that the present night-time restrictions, whereby a specific street is removed from the truck route system at night during the hours of 7:00 P.M. to 7:00 A.M., be extended into other selected residential areas and along non-essential night-time truck streets. The following recommendations are made with respect to additions and deletions to the present night-time truck restricted streets.

(1) Due to citizens' complaints, the City has approved a night-time ban on Mohawk Road. Two general types of trucking activities were found on the west section of Mohawk Road. The first and primary activity is related to the construction activity on the west Mountain. This activity will continue whatever is done to Mohawk Road. The second activity is trucks requiring access to the Highway system. These are also the major source of night-time complaints.

The City's Official Plan, however, designates Mohawk Road as a Major Arterial Street. The Province of Ontario has provided an interchange at Highway 403 on Mohawk Road. The traffic on Mohawk Road is there by design, not by accident. It has been estimated that the result of a night-time ban on Mohawk Road would not be to divert traffic onto Highway 403, but rather divert them through the City. The re-routed trucks would disrupt many more people in the lower City and aggravate their problems.

It is, therefore, concluded that the least overall impact, in the short-term, would be to leave trucks on Mohawk Road. In the long-term, the solution lies in the construction of the Mountain Freeway.

(2) Several streets are recommended for night-time restrictions. Many of these have been chosen due to particular area problems and others in response to the Neighbourhood Planning concept, whereby older residential areas are protected. These are listed, in detail, in Item (4) of the detailed recommendations in the letter of transmittal.

(3) Several other streets have a potential for night-time restrictions. However, all of these depend on capital works being completed prior to their implementation, and the willingness of people to accept trucks on the streets to which they will be diverted.

The prime example here is Cannon Street, east of Victoria Avenue, and those streets crossing it, south of Barton Street. The capital work that is required to implement this is the removal of curbside parking along both sides of Barton Street. The biggest opposition to restricting trucks at night on Cannon Street, Sherman Avenue, Birch Avenue, Wentworth Street and Sanford Avenue is, however, the unwillingness of the Barton Street residents and merchants to accept all the extra trucks.

The only real and long-term solution is the construction of the Industrial Perimeter Road.

LEGISLATION & ENFORCEMENT

(1) It is recommended that the Board of Police Commissioners be requested to review the City of Hamilton Cartage Licence requirements. The present requirements are considered inadequate. Several other municipalities have enacted strict guidelines and incorporate many of the Province's P.C.V. Licence provisions.

(2) It is recommended that the City Planning and Building Departments be requested to review the Zoning By-law restrictions which prohibit the storage of trucks on residential land in residentially zoned areas. This By-law should be updated, strengthened, made enforceable and then be enforced.

(3) It is recommended that the Police Department be requested to develop a 24-hour traffic squad in order that a consistent and concerted enforcement programme be implemented for all traffic violations. This squad ought to be well versed with all aspects of traffic enforcement. The prime aim of this squad, however, must continue to be the control and reduction of accidents and accident prone violations. Nuisance complaints such as truck route violations will, therefore, continue to be secondary, but will be covered better than at present. It is recognized that this request may involve staff additions, and, therefore, it is requested that the City endorse such additions.

PROVINCE OF ONTARIO

Several recommendations for review and consideration by the Ontario Ministry of Transportation and Communications are suggested. Several of these are specific to the City of Hamilton, but others would be applicable throughout the Province.

(1) The Province be requested to review the use of Highways 53 and 20 under their Class "L" Licence for out-of-Province carriers. Until such time as the Mountain and Red Hill Creek Freeway is built, Highway 403 and the Queen Elizabeth Way could be used.

(2) At present, municipalities are allowed to regulate traffic over fifty (50) feet in length. This length designation is inappropriate for all except the longest combination of trucks. It is recommended that the 50 feet designation be lowered to 35 feet, since all single unit trucks are less than 35 feet in length and all tractor-trailers or combinations of vehicles are in excess of 35 feet.

(3) In keeping with the above recommendation, municipalities would be able to develop a truck route system which would designate certain streets for the use of all vehicles, including tractor-trailers, and other streets which allow single unit trucks, but exclude tractor-trailers. If this concept were approved, then the Province would have to give consideration as to a meaningful signing system to implement this dual truck route concept. Nash Road, in Hamilton, has been recommended for experimentation with such signs, since several distinct possibilities could occur. These include;

- 24-Hour truck route system, all vehicles;
- Daytime truck route system, all vehicles;
- 24-Hour truck route system, single unit vehicles;
- Daytime truck route system, single unit vehicles;
- Daytime truck route system, all vehicles, and night-time truck route system, single unit vehicles only.

Several other streets, such as Cannon Street, Wilson Street and Wentworth Street could be considered candidates for implementation with the latter treatment once an appropriate signing system is developed and curb-side parking has been removed from Barton Street.

OTHER ISSUES

Several other issues have been identified for consideration, during the course of the study. The most notable of this is the necessity of constructing a street system other than the present arterial street system with a multiplicity of homes on them. The prime concern here is the construction of the Industrial Perimeter Road which would connect Burlington Street westward with Highway 403. A continuous link would then be provided for the industrial area and would connect it to the Provincial Highway system, both at the east and west City Limits. This is the only meaningful answer to the present and increasing truck problem along Cannon, Wilson, York, King, Main, Wentworth and Wellington Streets, and Sherman, Birch and Victoria Avenues.

The present problems along Rymal Road, Mohawk Road and Centennial Parkway are minor, in relation to the above lower City problems, but will increase both in severity and magnitude as industry moves onto the Mountain, as the Mount Hope Airport expands, and as the Lake Erie Industrial complexes develop. The vital need for the Mountain-Red Hill Freeway, in its presently proposed location, becomes, therefore, more and more evident. Consideration should also be given to developing a controlled access highway southerly to Lake Erie as an extension of the Red Hill Creek portion of the Freeway. This would provide a route that overcomes the problems that would occur if all the traffic were on Wellington Street - Victoria Avenue, Upper James Street and Highway 6 through the many towns and villages to Lake Erie.

LOCATION: RED HILL CREEK, SEATTLE, WA

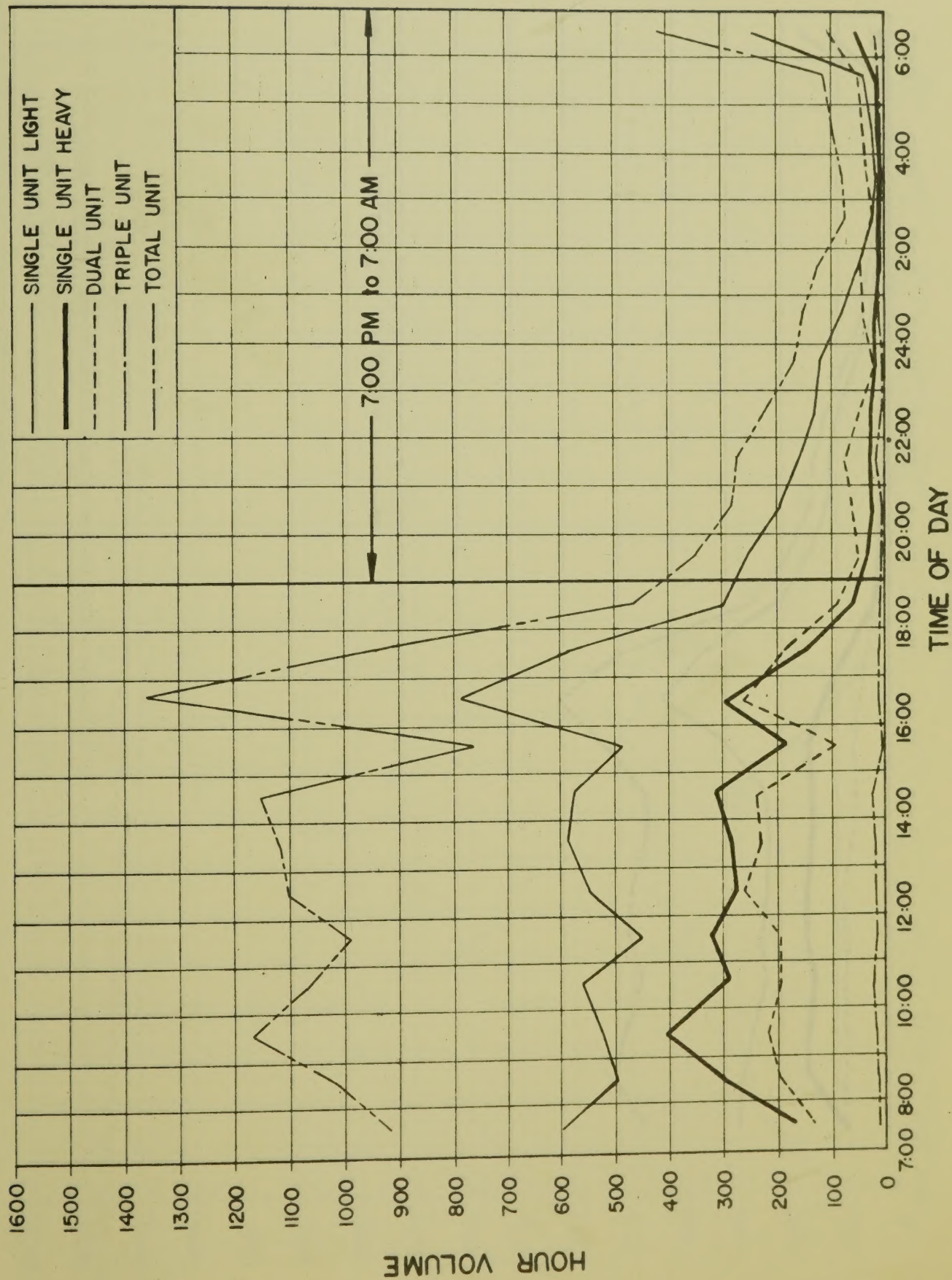


APPENDIX
ILLUSTRATIONS

WATER LEVEL

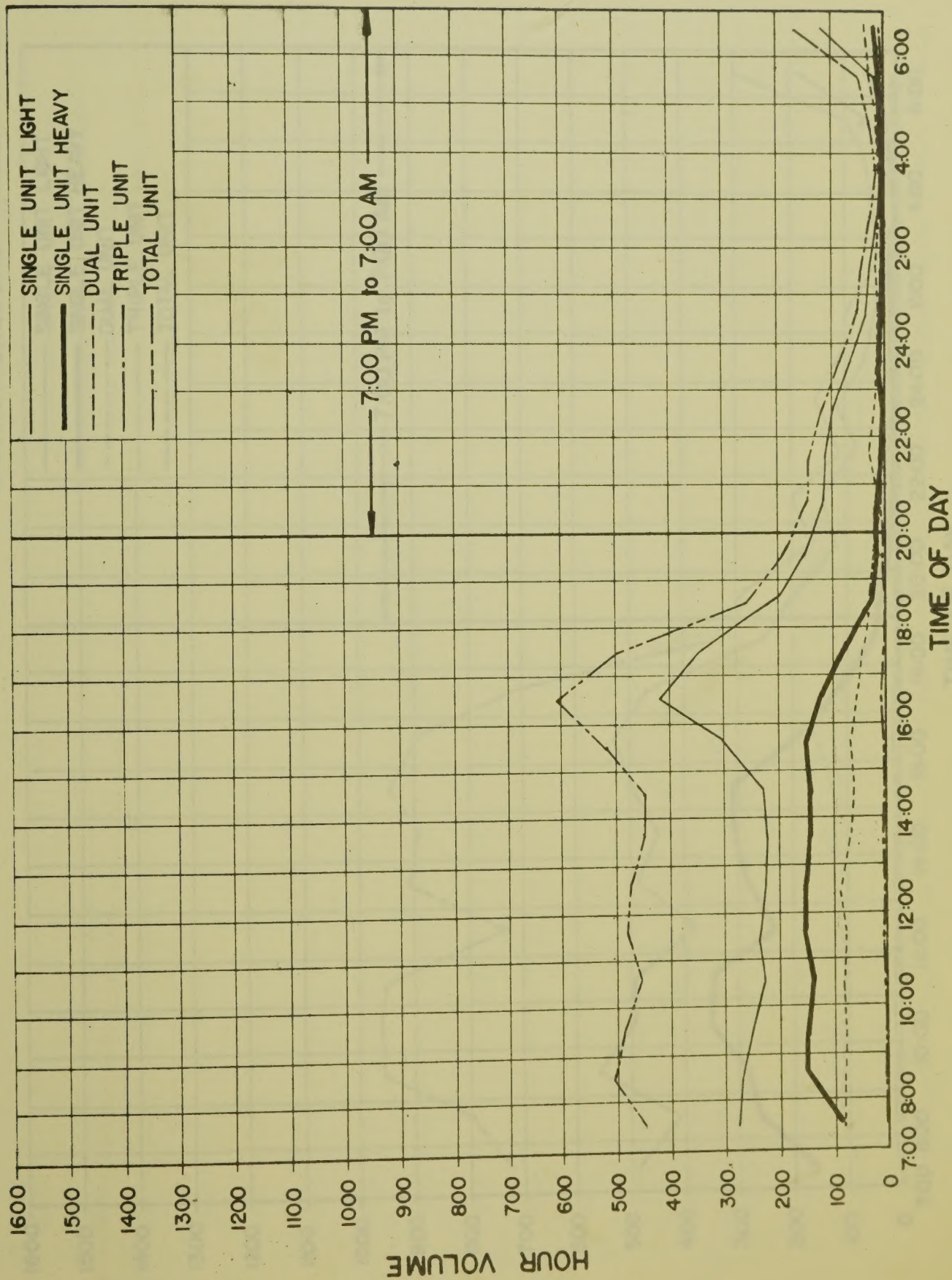
TRUCK VOLUME BY TIME OF DAY

LOCATION: RED HILL CREEK SCREENLINE



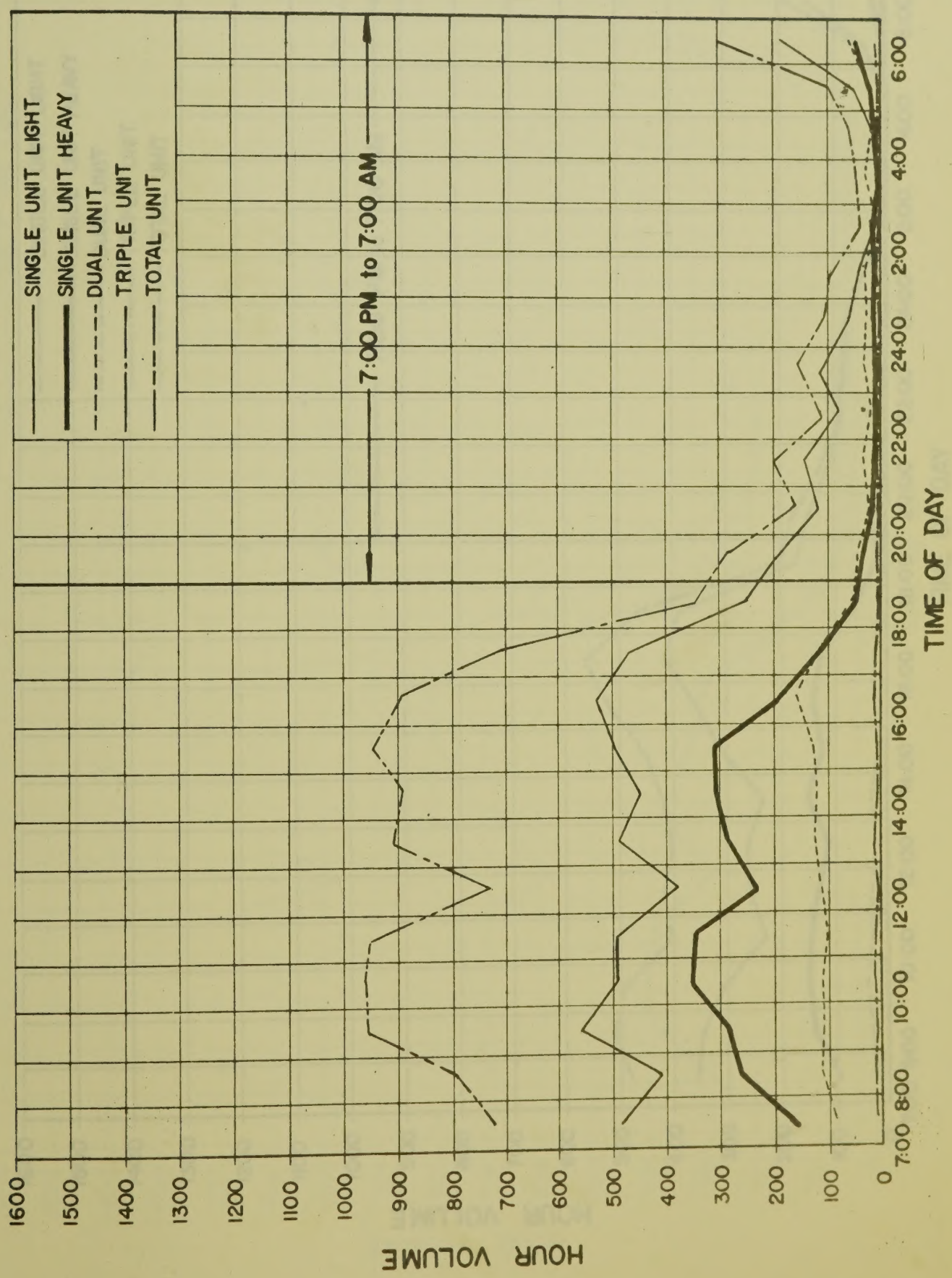
LOCATION: SOUTH and WEST MOUNTAIN

SCREENLINE



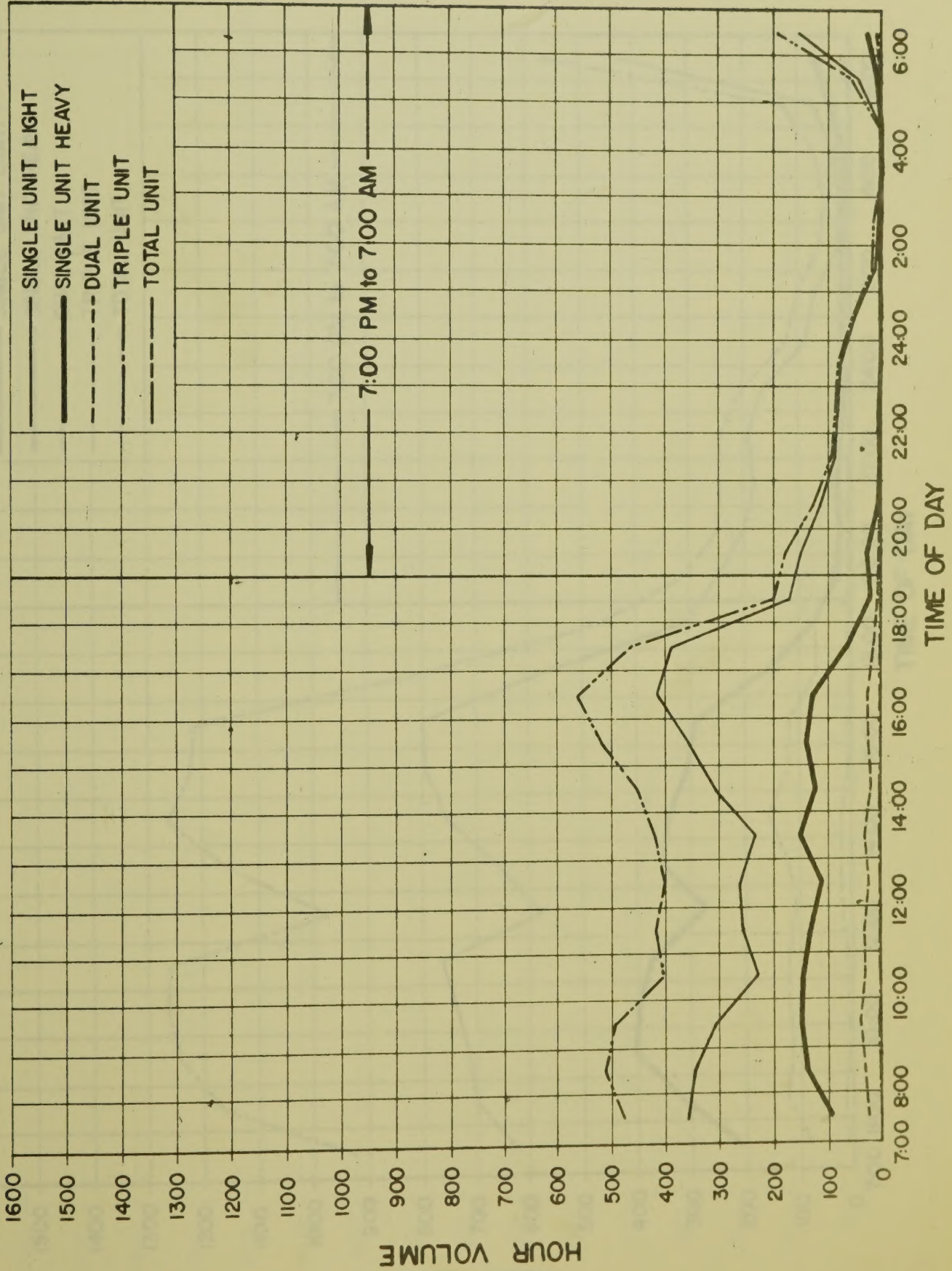
TRUCK VOLUME BY TIME OF DAY

LOCATION: CHEDOKE VALLEY SCREENLINE



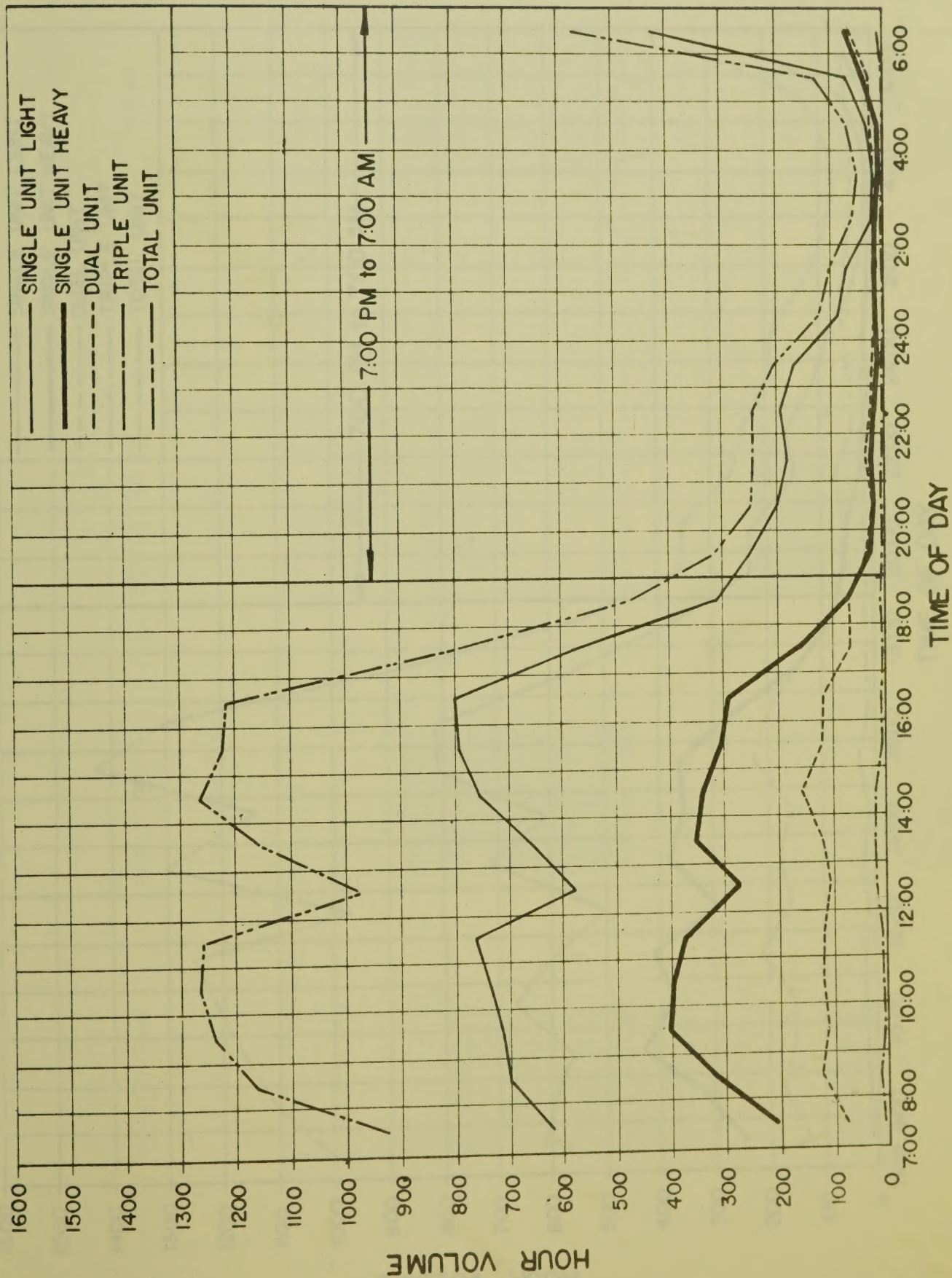
TRUCK VOLUME BY TIME OF DAY

LOCATION: MOUNTAIN BROW SCREENLINE

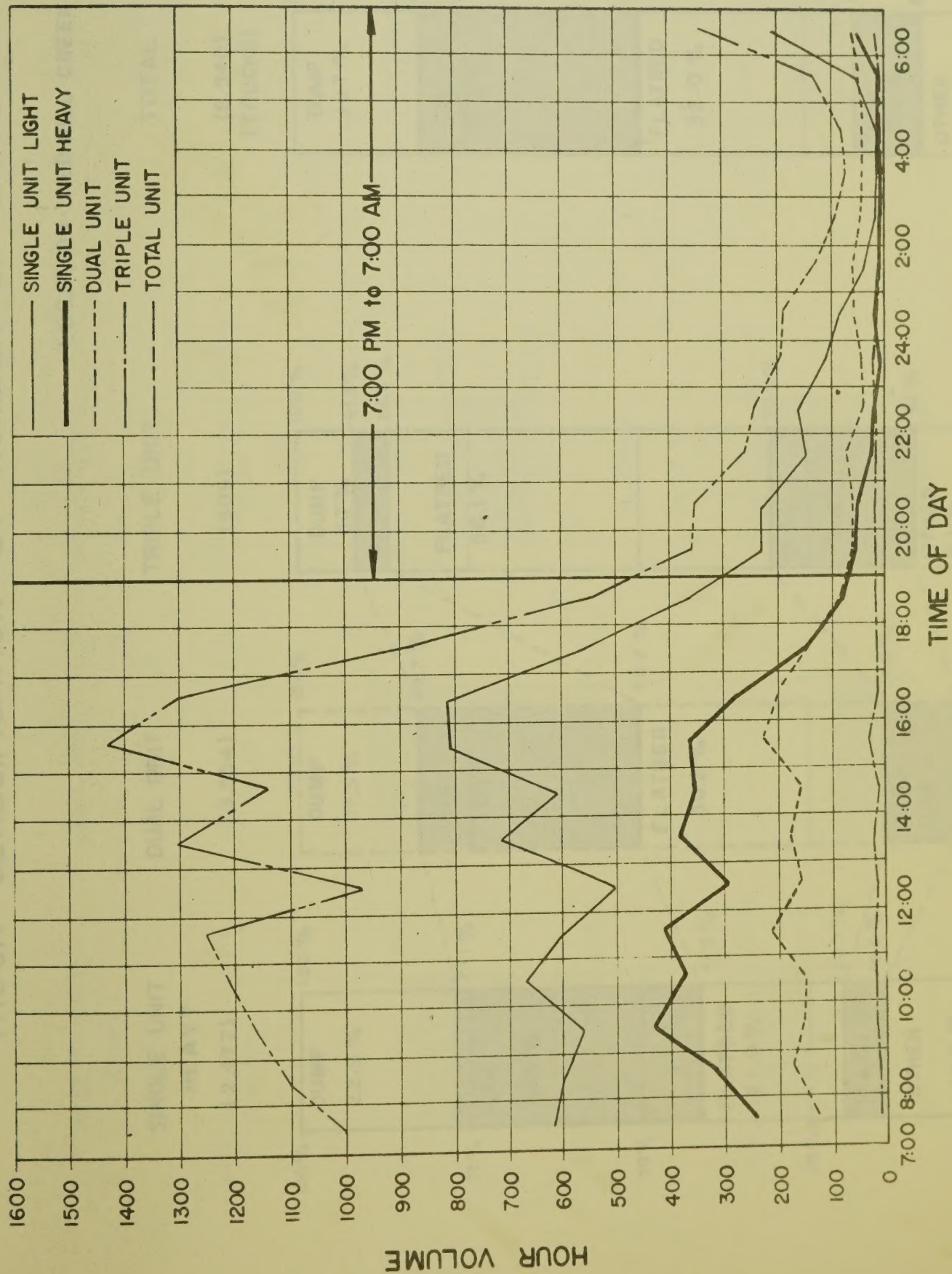


TRUCK VOLUME BY TIME OF DAY

LOCATION: VICTORIA AVE. SCREENLINE



LOCATION: KENILWORTH AVE. SCREENLINE

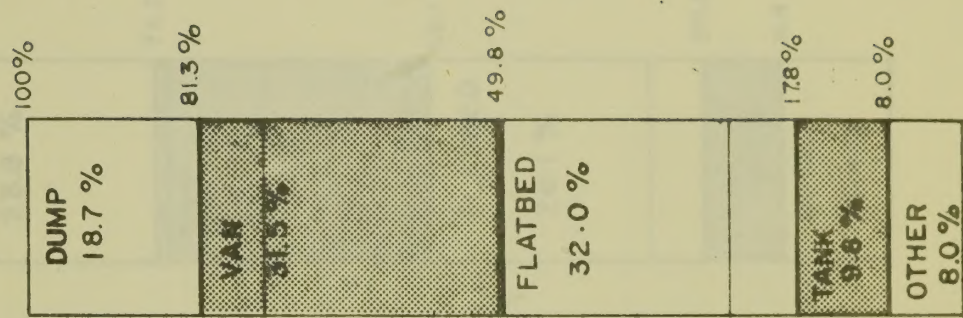


TRUCK CLASSIFICATION BY NUMBER OF UNITS

LOCATION: RED HILL CREEK SCREENLINE

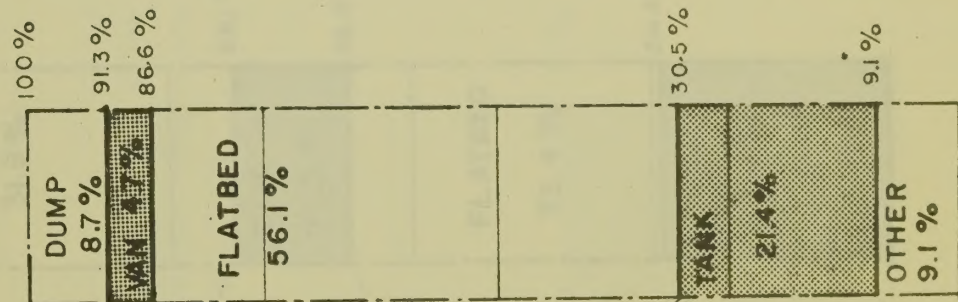
TOTAL

(6,540)
(TRUCKS)



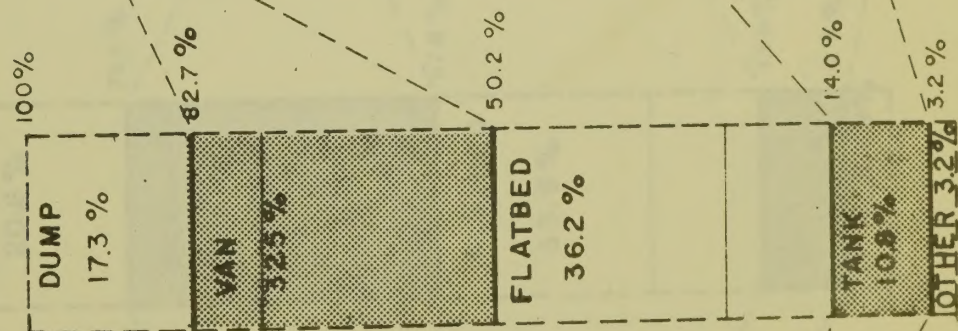
TRIPLE UNIT

(509)



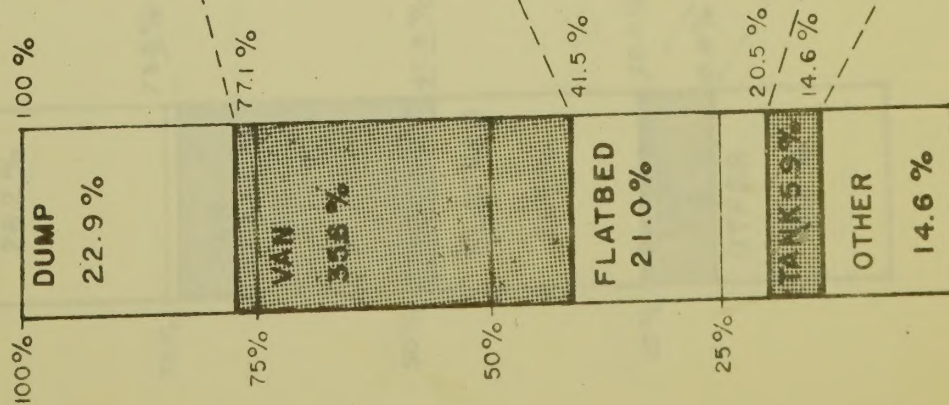
DUAL UNIT

(3,554)



SINGLE UNIT
HEAVY

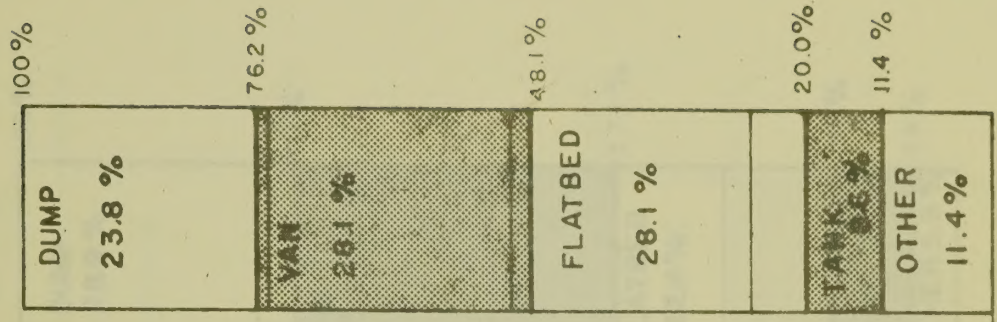
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LOCATION: SOUTH and WEST MOUNTAIN
SCREENLINE

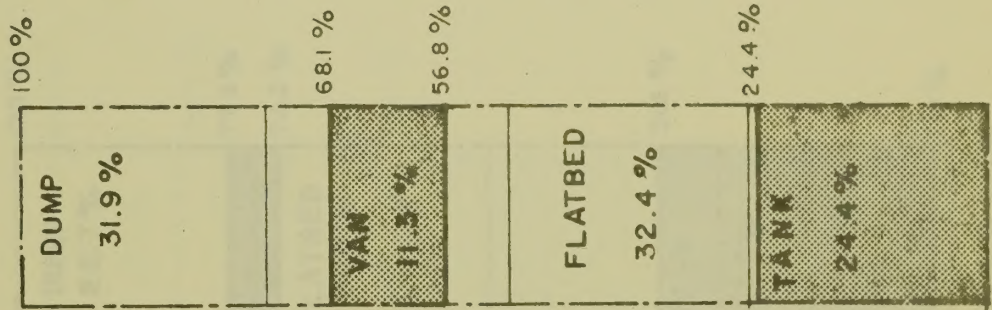
TOTAL

(2,545)
TRUCKS



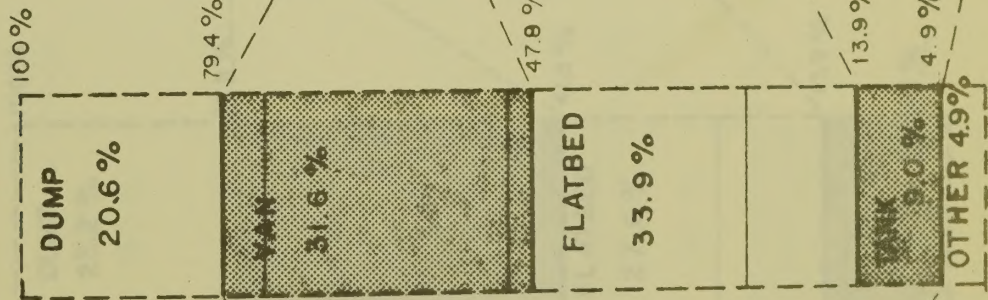
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(90)



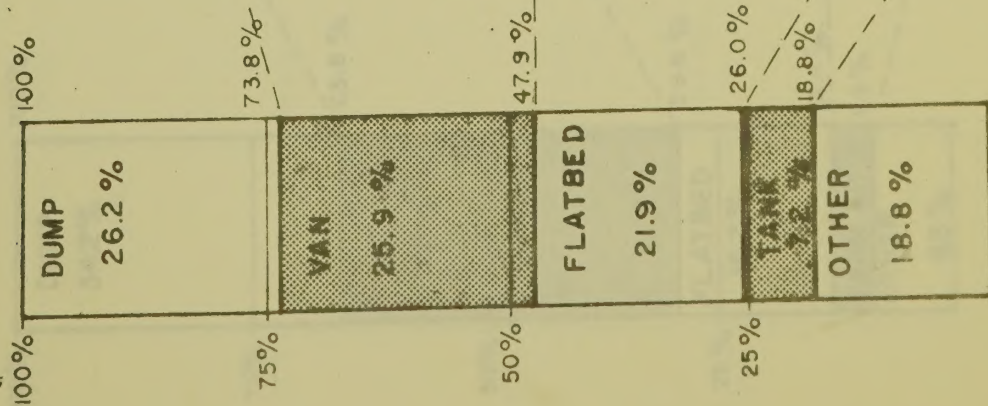
DUAL UNIT

(1,222)



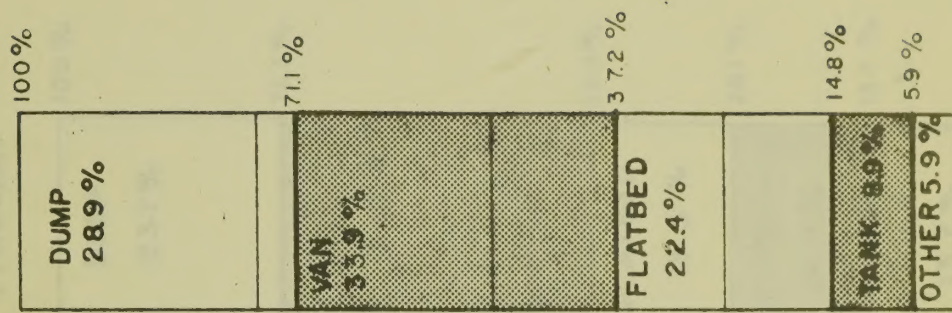
SINGLE UNIT
HEAVY

(1,233)



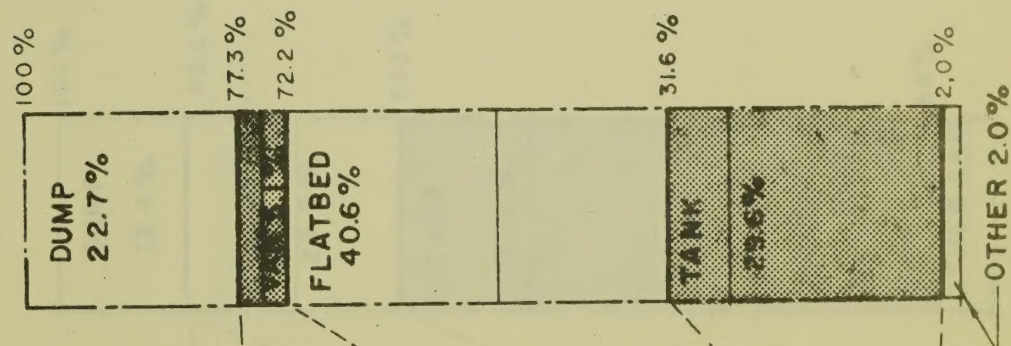
TOTAL

(4,564)
(TRUCKS)



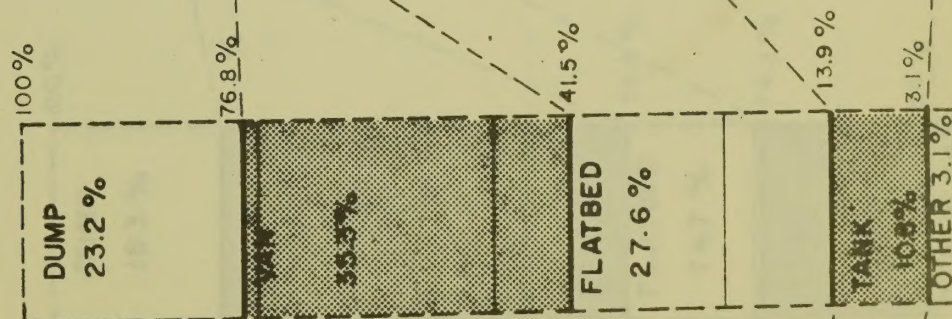
TRIPLE UNIT

(283)



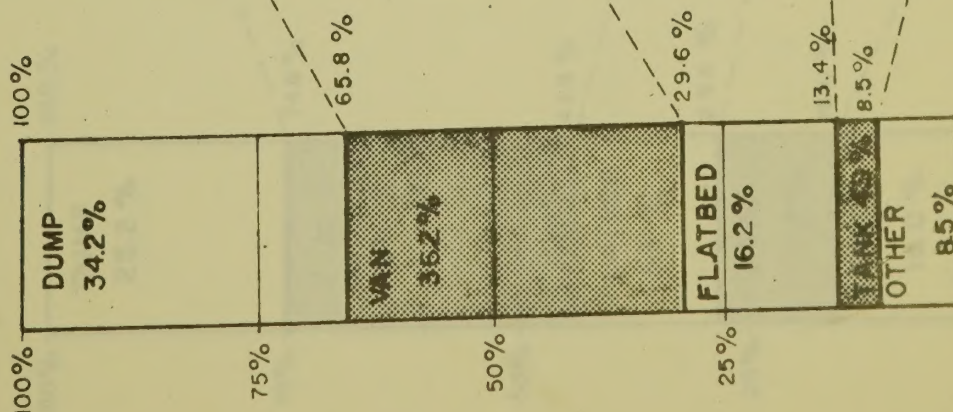
DUAL UNIT

(1,896)

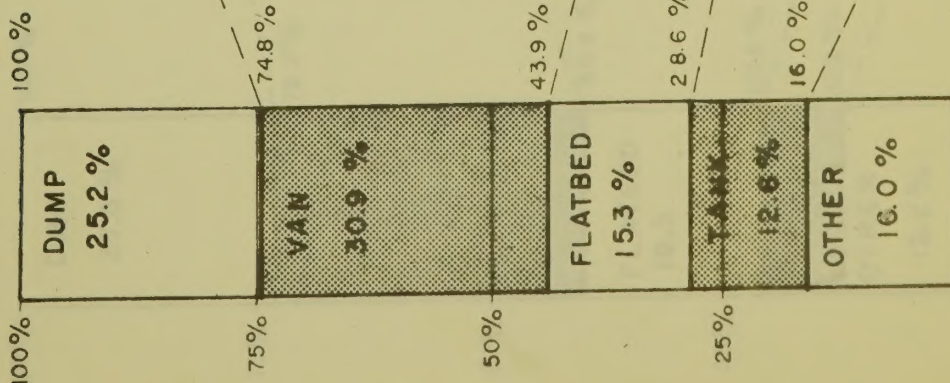


SINGLE UNIT
HEAVY

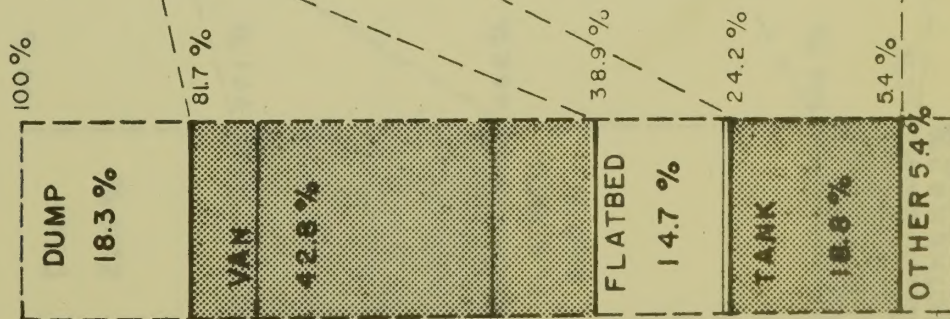
(2,385)



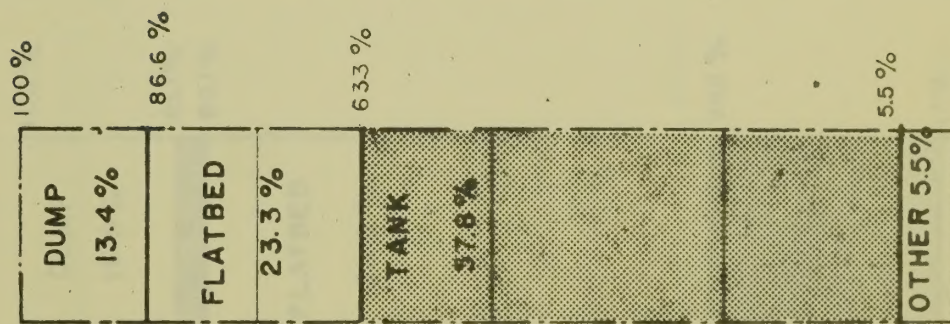
SINGLE UNIT
HEAVY
(1,340)



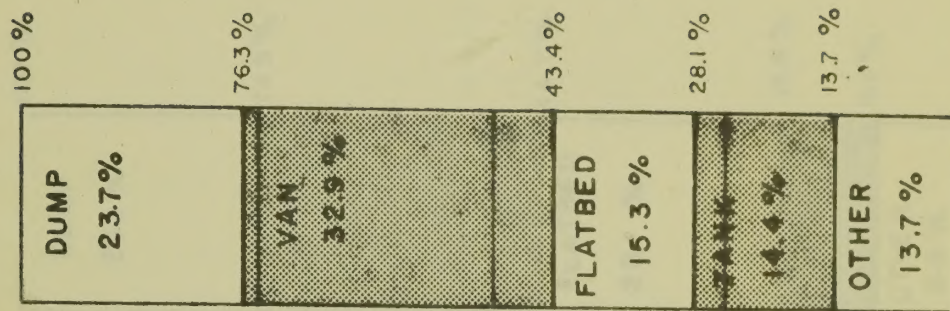
DUAL UNIT
(344)

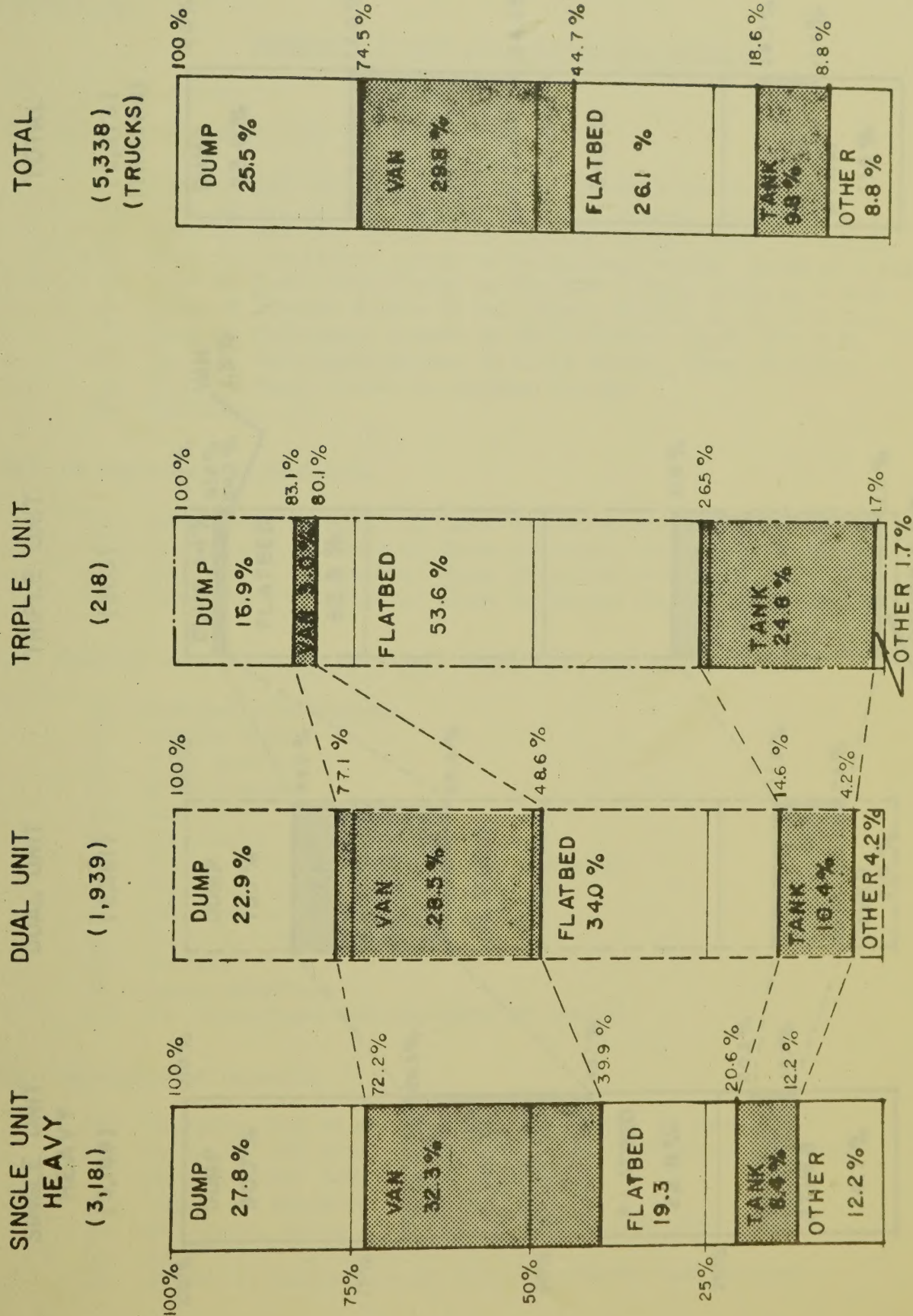


TRIPLE UNIT
(20)



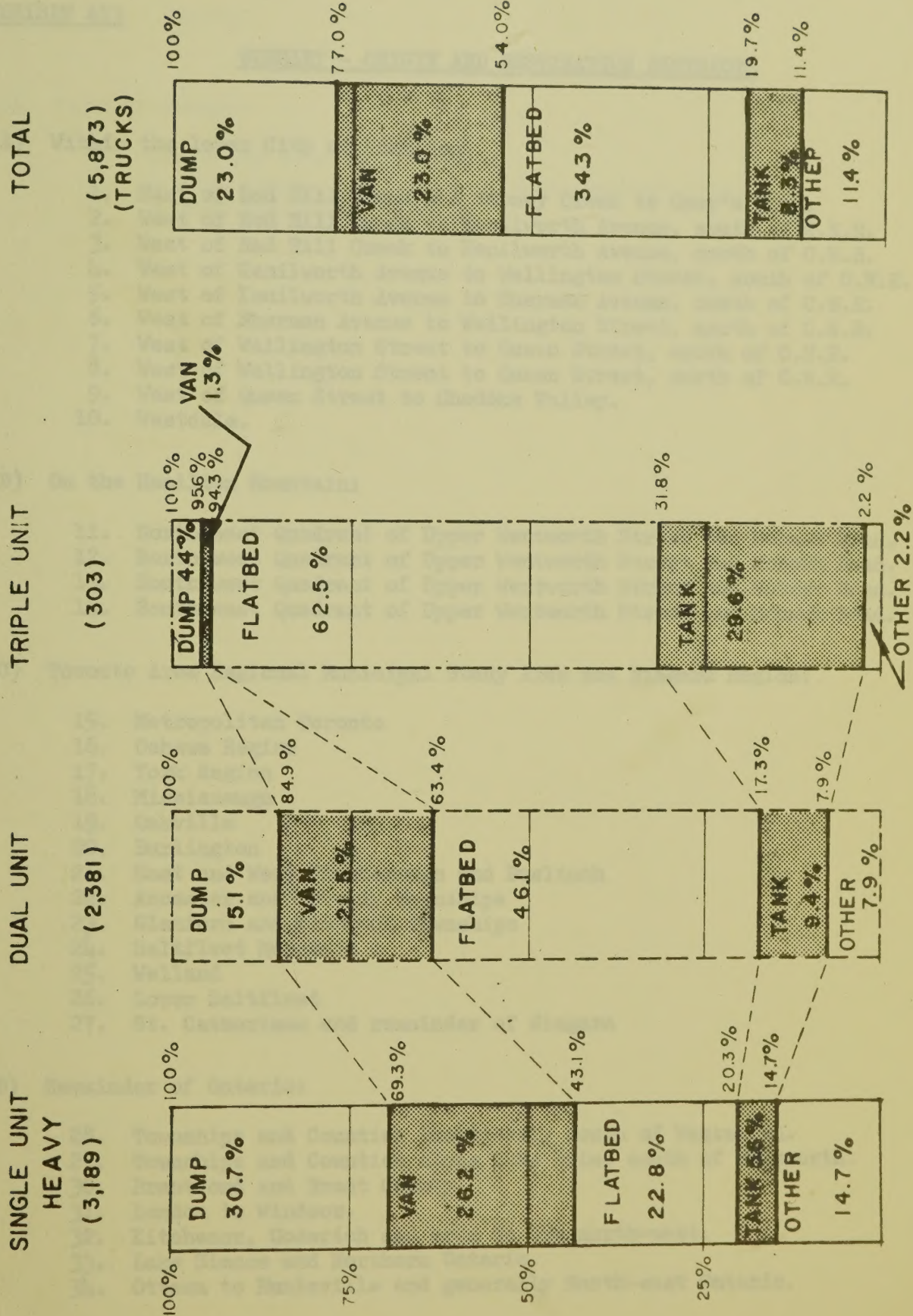
TOTAL
(1,704)
(TRUCKS)





TRUCK CLASSIFICATION BY NUMBER OF UNITS

LOCATION: KENILWORTH AVE. SCREENLINE



SUMMARY - ORIGIN AND DESTINATION DISTRICTS

(A) Within the lower City of Hamilton:

1. East of Red Hill Creek and Stoney Creek to Gray's Road.
2. West of Red Hill Creek to Kenilworth Avenue, south of C.N.R.
3. West of Red Hill Creek to Kenilworth Avenue, north of C.N.R.
4. West of Kenilworth Avenue to Wellington Street, south of C.N.R.
5. West of Kenilworth Avenue to Sherman Avenue, north of C.N.R.
6. West of Sherman Avenue to Wellington Street, north of C.N.R.
7. West of Wellington Street to Queen Street, south of C.N.R.
8. West of Wellington Street to Queen Street, north of C.N.R.
9. West of Queen Street to Chedoke Valley.
10. Westdale.

(B) On the Hamilton Mountain:

11. North-east Quadrant of Upper Wentworth Street and Mohawk Road.
12. North-west Quadrant of Upper Wentworth Street and Mohawk Road.
13. South-west Quadrant of Upper Wentworth Street and Mohawk Road.
14. South-east Quadrant of Upper Wentworth Street and Mohawk Road.

(C) Toronto Area Regional Municipal Study Area and Niagara Region:

15. Metropolitan Toronto
16. Oshawa Region
17. York Region
18. Mississauga
19. Oakville
20. Burlington
21. East and West Flamborough and Puslinch
22. Ancaster and Beverly Townships
23. Glanford and Binbrook Townships
24. Saltfleet Mountain
25. Welland
26. Lower Saltfleet
27. St. Catherines and remainder of Niagara

(D) Remainder of Ontario:

28. Townships and Counties immediately south of Wentworth.
29. Townships and Counties along Lake Erie, south of Wentworth.
30. Brantford and Brant County.
31. London to Windsor.
32. Kitchener, Goderich and area to the north-west.
33. Lake Simcoe and Northern Ontario.
34. Ottawa to Huntsville and generally North-east Ontario.

EXHIBIT A13 - Cont'd.

(E) Outside Ontario:

35. Quebec and Atlantic Provinces.
36. Western Canada and Central to West American States.
37. Eastern American States.

DISTRICT O.D. TABLE

ALL TRUCKS

		D E S T I N A T I O N										I N T E R N A L										S C R E E N L I N E																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	TOTAL	
1	13	9	5	11	100	95	73	143	35	40	15	28	22	5	6	3	4	6	17	8	5	8	8	1				1	8	1	3	14	7	6	6			1		643
2	3	14	43	96	117	42	50	87	18	40	17	25	29	22	12	10	3	4	6	5	21	18	14	2					3	14	11	8					592			
3	4	75	85	181	96	254	102	196	50	35	11	58	55	19	37	54	10		7	14	18	15	5						26	20	26	11					1007			
4	5	83	240	180	100	65	100	135	28	32	25	6	29	11	46	94	7	17	46	27	26	24	5						6	14	14	4					1353			
5	6	91	69	135	85	150	190	80	123	26	5	31	41	18	40	76	13	5	22	45	254	5	7						9	5	107	63	30	10			2702			
6	7	121	87	117	170	74	43	14	33	12	5	38	41	28	28	17	5		4	21	23	14	3						1	10	26	18	4				1269			
7	8	38	27	40	30	28	9	15	16	3	7	10	11	3	12	11	1			2	10	5	1						2	5	2	5	7	3			999			
8	9	29	30	35	55	30	4	4	4	9	2	1	5	2	17	1				8	3	3	1						4	4	2	2	1				384			
9	10	25	32	21	24	25	34	27	8	9	9	6	5	4	1	8			2	2	8	3							8	3	3						259			
10	11	25	32	21	24	25	34	27	8	9	9	6	5	4	1	8			2	2	8	3															146			
11	12	8	25	37	62	27	28	40	7	12	2	4	6	2	2	6			2	4	4	7															254			
12	13	12	22	14	35	27	16	28	7	13	2	8	6	4	2	8			2	2	6	9															270			
13	14	13	10	22	29	31	20	22	8	13	2	2	8	2	5	3			2	2	6	9															207			
14	15	25	9	21	80	142	60	30	15	14	7	27	14	4	6	3			1		2																477			
15	16	5		1	7	8	5	4							2																						31			
16	17			2	4		32	3	4	3					5																						14			
17	18	3		3	20	32	14	5	2						1	2																					113			
18	19			17	13	44	22	3	8	2		1	7	2																							85			
19	20	2		9	40	78	11	5	7	8		5	2	1	2																						223			
20	21	9		10	36	258	19	5	8	2		2	3	2	12																						370			
21	22	17		13	16	23	6	9	3			3	3	6																							138			
22	23			2	20	18	2	2	4																												59			
23	24			3	6	2	16	2	3																												12			
24	25			8	8	23	7	2	3																												34			
25	26			3	27	51	60	57	3	7		2	4	3																							79			
26	27			7	16	25	21	37	33	5		4	3	3																							262			
27	28			8	16	2				6																											140			
28	29			14	19	30	25	2	2																												2			
29	30			23	14	30	76	2	4																												121			
30	31			6	5	76	17	2	4																												153			
31	32			26	24	54	36	7	2			12	1	1	2																						181			
32	33			6	2	11	1	2	2																												21			
33	34			2	2	12	4	2	2																												40			
34	35			2	2	12	4	2	2																												16			
35	36			2	1	6	14	2	2																												19			
36	37			2	8	2	9	1																													18			
37																																								
TOTAL		605	584	949	1488	2605	1157	1243	430	320	116	313	304	174	258	293	33	11	109	52	180	380	103	30	24	45	56	284	107	13	142	202	176	35	31	21	24	18	12915	

TABLE

MULTIPLE UNIT

D E S T I N A T I O N																																					I N T E R N A L										S C R E E N L I N E																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	TOTAL																																					
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37																																					1																																					
TOTAL																																					203	169	345	364	1363	534	361	193	126	41	61	55	52	37	177	22	3	67	33	56	123	27	6	5	30	28	178	52	12	97	169	115	26	13	23	22	16	5204

DISTRICT O.D. TABLE

		ALL TRUCKS		SCREENLINE		TOTAL	
		EXTERNAL	INTERNAL				

TRANSPORTATION AND TRAFFIC COMMITTEE

Alderman J. Stowe, Chairman

Controller J. A. Bethune
Alderman D. A. Carson
Alderman D. Gray
Alderman W. M. McCulloch

Alderman P. O. Valeriano
Alderman F. A. Lombardo
Alderman W. F. Scandlan
Alderman K. M. Edge

SUB-COMMITTEE ON TRUCKS

Alderman J. Stowe, Chairman

Alderman W. M. McCulloch

Alderman P. O. Valeriano

Alderman F. A. Lombardo

Chief L. G. Lawrence,
(Inspector V. Zwirewich)
Police Department

Mr. R. J. Desjardins,
Traffic Commissioner

Mr. J. Kennelly Jr.,
Hamilton Trucking Council

Mr. A. U. Oakie,
(Mr. A. H. Lomax)
Hamilton Automobile Club

Mr. A. P. Calvert,
Hamilton & District
Chamber of Commerce

MANAGEMENT COMMITTEE

Mr. R. J. Desjardins, Chairman

Alderman J. Stowe

Chief L. G. Lawrence,
(Inspector V. Zwirewich)
Police Department

Mr. H. O. Schweinbenz,
Traffic Department

Mr. G. E. Morse, Secretary

Mr. D. Shannon,
Regional Engineer

&

Mr. J. Gleason,
Traffic Control Engineer,
Ministry of Transportation
and Communications

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